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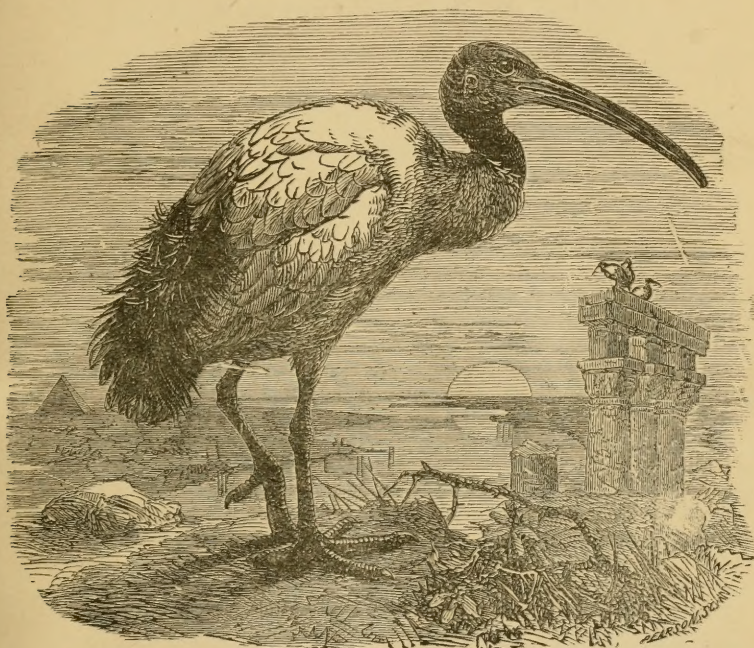
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THE IBIS, A QUARTERLY JOURNAL OF ORNITHOLOGY.

EDITED BY

WILLIAM LUTLEY SCLATER, M.A., F.Z.S.



VOL. VI. 1918.

TENTH SERIES.

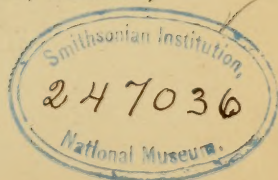
He prayeth well, who loveth well
Both man and bird and beast.

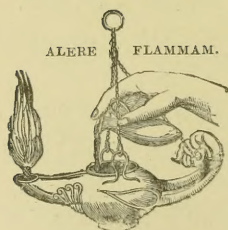
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1918.





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P R E F A C E.

THE present number of 'THE IBIS' is the two hundred and twenty-fourth, and completes the tenth series, and with its issue the Editor wishes to thank his numerous contributors for the support they have given him in these difficult times. The Editor believes that the papers and other communications contained in the present series will compare favourably with those of the previous series, notwithstanding the unprecedented events which are taking place throughout the world, and which have turned men's minds away from the peaceful pursuits of ornithological and other scientific researches.

It is his hope, as doubtless it is that of all the other Members of the British Ornithologists' Union, that peace will come soon, and we shall all be able to give our undivided attention to our favourite study—the advancement of Ornithology.

W. L. S.

DATES OF ISSUE OF THE PARTS OF
'THE IBIS' FOR 1918.

TENTH SERIES.

VOLUME VI.

Number 1.	issued	January 22nd.
„ 2.	„	April 9th.
„ 3.	„	July 15th.
„ 4.	„	October 15th.

LIST OF THE MEMBERS

OF THE

BRITISH ORNITHOLOGISTS' UNION.

1918.

[An asterisk indicates an Original Member. It is particularly requested that Members should give notice to the Secretary of the Union of any error in their addresses or descriptions in this List, in order that it may be corrected.]

Date of
Election.

1916. ADAMS, ERNEST EDWARD ; Lloyd's, Royal Exchange, E.C. 3.
1914. ALDWORTH, Capt. THOMAS PRESTON.
1911. ALEXANDER, HORACE GUNDRY ; 3 Mayfield Road, Tunbridge
Wells, Kent.
1888. APLIN, OLIVER VERNON ; Stonehill House, Bloxham, Oxon.
5 1896. ARCHIBALD, CHARLES F. ; 2 Darnley Road, West Park,
Leeds, Yorks.
1896. ARRIGONI DEGLI ODDI, Count ETTORE, Professor of Zoology,
University, Padua ; and Ca'oddo, Monselice, Padua, Italy.
1901. ARUNDEL, Major WALTER B., F.Z.S. ; High Ackworth, Ponte-
fract, Yorks.
1915. ASHBY, EDWIN ; Wittunga, Blackwood, Adelaide, S. Australia.
1901. ASHBY, HERBERT ; Broadway House, Brookvale Road,
Southampton.
10 1908. ASHWORTH, JOHN WALLWORK, M.R.C.S., L.R.C.P., F.R.G.S.,
F.G.S. ; Thorne Bank, Heaton Moor, near Stockport,
Cheshire.
1918. ASTLEY, ARTHUR ; Freshfield, Ambleside.
1897. ASTLEY, HUBERT DELAVAL, M.A., F.Z.S. ; Brinsop Court,
Hereford.
1885. BACKHOUSE, JAMES, F.Z.S. ; The Old Manor House
Knaresborough, Yorks.
1904. BAHR, PHILIP HEINRICH, M.A., M.B., M.R.C.S., L.R.C.P.,
F.Z.S. ; 12 Vicarage Gardens, Kensington, W. 8.

Date of
Election.

- 15 1901. BAILWARD, Col. ARTHUR CHURCHILL, F.Z.S. (R.F.A.);
64 Victoria Street, S.W. 1.
1892. BAKER, E. C. STUART, J.P., F.Z.S., F.L.S.; 6 Harold Road,
Upper Norwood, S.E. 19. (*Hon. Secretary and Treasurer.*)
1901. BAKER, JOHN C., M.B., B.A.; Ceely House, Aylesbury,
Bucks.
1906. BANNERMAN, DAVID A., B.A., F.R.G.S.; 6 Palace Gardens
Terrace, Kensington, W. 8.
1890. BARCLAY, FRANCIS HUBERT, F.Z.S.; The Warren, Cromer,
Norfolk.
- 20 1885. BARCLAY, HUGH GURNEY, F.Z.S.; Colney Hall, Norwich,
Norfolk.
1903. BARTELS, MAX.; Pasir Datar, Halte Tjisaat (Preanger), Java,
Dutch East Indies.
1906. BATES, GEORGE L., C.M.Z.S.; Bitye, *vid* Yaunde, Cameroon,
West Africa.
1912. BAXENDALE, FRANCIS RICHARD SALISBURY; Commissioner of
Famagusta, Cyprus.
1913. BAYNES, GEORGE KENNETH; 120 Warwick Street, S.W. 1.
- 25 1912. BEEBE, Capt. C. WILLIAM, C.M.Z.S.; Curator of Birds, New
York Zoological Park, New York, U.S.A.
1910. BEESTON, HARRY; Sunnymead, South Street, Havant, Hants.
1897. BENSON, JOHN.
1897. BERRY, WILLIAM, B.A., LL.B.; Tayfield, Newport, Fifeshire.
1917. BERTRAM-JONES, JOHN WILLIAM; Kelvedon Hall, Brentwood,
Essex.
- 30 1914. BETHAM, Brigadier-General ROBERT M.; c/o Messrs. Grindlay
& Co., Hornby Road, Bombay, India.
1907. BETHELL, The Hon. RICHARD, F.Z.S. (Scots Guards); 18 Lower
Seymour Street, W. 1.
1907. BICKERTON, WILLIAM, F.Z.S.; The Firs, Farraline Road, Wat-
ford, Herts.
1880. BIDWELL, EDWARD; 1 Trig Lane, Upper Thames Street,
E.C. 4.
1892. BIRD, The Rev. MAURICE C. H., M.A.; Brunstead Rectory,
Stalham, S.O., Norfolk.
- 35 1891. BLAAUW, FRANS ERNST, C.M.Z.S.; Gooilust, 's Graveland
Hilversum, Noord-Holland.
1913. BLACKWOOD, Lt. GEORGE GLENDINNING, M.C. (Seaforth High-
landers); Southwood, Peebles.

Date of
Election.

1912. BLAINE, Capt. GILBERT, F.Z.S.; 5 A The Albany, Piccadilly, W. 1.
1903. BLATHWAYT, The Rev. FRANCIS LINLEY, M.A.; Melbury Rectory, Dorchester, Dorset.
1914. BLYTH, ROBERT OSWALD, M.A.; Balvonie, Skelmorlie, Ayrshire.
- 40 1897. BONAR, The Rev. HORATIUS NINIAN, F.Z.S.; 16 Cumin Place, Edinburgh.
1905. BONE, HENRY PETERS.
1894. BONHOTE, JOHN LEWIS, M.A., F.L.S., F.Z.S.; Zoological Gardens, Giza, Egypt; and Gade Spring Lodge, Hemel Hempstead, Herts.
1906. BOORMAN, STAINES; Heath Farm, Send, Woking, Surrey.
1898. BOOTH, GEORGE ALBERT; Whalley Range, Longton, Lancs.
- 45 1904. BOOTH, HARRY B.; Ryhill, Ben Rhydding, *via* Leeds, Yorks.
1908. BORRER, CLIFFORD DALISON; 6 Durham Place, Chelsea, S.W. 3.
1918. BOYD, Capt. ARNOLD WHITWORTH, M.C. (Lancashire Fusiliers); The Alton, Altrincham, Cheshire.
1915. BRADFORD, ARTHUR DANBY, F.Z.S.; Upton Lodge, Watford, Herts.
1895. BRADFORD, Sir JOHN ROSE, K.C.M.G., M.D., D.Sc., F.R.S., F.Z.S.; 8 Manchester Square, W. 1.
- 50 1909. BRIGGS, THOMAS HENRY, M.A., F.E.S.; Rock House, Lynmouth, R.S.O., N. Devon.
1902. BRISTOWE, BERTRAM ARTHUR; Ashford Farm, Stoke D'Abernon, Cobham, Surrey.
1908. BROOK, EDWARD JONAS, F.Z.S.; Hoddam Castle, Ecclefechan, Dumfriesshire.
1899. BROOKE, JOHN ARTHUR, J.P.; Fenay Hall, Huddersfield; and Fearn Lodge, Ardgay, Ross-shire.
1912. BROWN, THOMAS EDWARD; c/o Messrs. G. Beyts & Co., 11 Port Tewfik, Suez, Egypt.
- 55 1900. BRUCE, WILLIAM SPEIRS, LL.D., F.R.S.E.; Scottish Oceanographical Laboratory, Surgeon's Hall, Edinburgh.
1907. BUCKLEY, CHARLES MARS; 4 Hans Crescent, S.W. 1.
1906. BUCKNILL, Sir JOHN ALEXANDER STRACHEY, K.C., M.A., F.Z.S.; Chief Justice, Straits Settlements; Nassim Hill, Singapore; and Athenæum Club, Pall Mall, S.W. 1.
1908. BUNYARD, PERCY FREDERICK, F.Z.S.; 57 Kidderminster Road, Croydon, Surrey.

Date of
Election.

1907. BUTLER, ARTHUR GARDINER, Ph.D., F.L.S., F.Z.S. ; 124 Beckenham Road, Beckenham, Kent.
- 60 1899. BUTLER, ARTHUR LENNOX, F.Z.S. ; St. Leonard's Park, Horsham, Sussex.
1900. BUTTRESS, BERNARD A. E. ; Craft Hill, Dry Drayton, Cambridge.
1905. BUXTON, ANTHONY ; Knighton, Buckhurst Hill, Essex.
1912. BUXTON, PATRICK ALFRED ; Fairhill, Tonbridge, Kent.
1896. CAMERON, Major JAMES S. (2nd Bn. Royal Sussex Regt.) ; Low Wood, Bethersden, Ashford, Kent.
- 65 1888. CAMERON, JOHN DUNCAN ; Low Wood, Bethersden, Ashford, Kent.
1909. CAMPBELL, DAVID CALLENDER, J.P. ; Templemore Park, Londonderry, Ireland.
1909. CARROLL, CLEMENT JOSEPH ; Rocklow, Fethard, Co. Tipperary, Ireland.
1904. CARRUTHERS, ALEXANDER DOUGLAS M. ; 7 Park Place, St. James', S.W. 1.
1908. CARTER, THOMAS ; Wensleydale, Mulgrave Road, Sutton, Surrey.
- 70 1890. CAVE, Capt. CHARLES JOHN PHILIP, M.A., F.Z.S. ; Ditcham Park, Petersfield, Hants.
1913. CHAPLIN, NUGENT ; The Lodge, Bourne End, Bucks.
1882. CHASE, ROBERT WILLIAM ; Herne's Nest, Bewdley, Worcestershire.
1908. CHEESMAN, ROBERT E. ; c/o F. V. Winch, Esq., North View, Willesley, Cranbrook, Kent.
1910. CHUBB, CHARLES, F.Z.S. ; British Museum (Natural History), Cromwell Road, S.W. 7.
- 75 1918. CHUBB, Capt. PATRICK ARTHUR (3rd K.O.Y.L.I. attached R.E. Signals, Signal Dépôt R.E., Hitchin, Herts) ; York Lodge, Cheltenham, Gloucestershire.
1912. CLARK, GEORGE WINGFIELD, M.A., F.Z.S. ; 2 Devana Terrace, Huntingdon Road, Cambridge.
1904. CLARKE, Major GOLAND VAN HOLT, D.S.O., F.Z.S. ; Chilworth Court, Romsey, Hants.
1916. CLARKE, JOHN PHILIP STEPHENSON ; Borde Hill, Cuckfield, Sussex.
1889. CLARKE, Col. STEPHENSON ROBERT, C.B., F.Z.S. ; Borde Hill, Cuckfield, Sussex.

Date of
Election.

- 80 1880. CLARKE, WILLIAM EAGLE, LL.D., F.L.S., F.R.S.E.; Royal Scottish Museum, Edinburgh. (*President.*)
1904. COCHRANE, Captain HENRY LAKE, R.N.; Naval Board, Melbourne, Australia.
1898. COCKS, ALFRED HENEAGE, M.A., F.Z.S.; Poynetts, Skirmett, near Henley-on-Thames, Oxon.
1895. COLES, RICHARD EDWARD; Rosebank, New Milton, S.O., Hants.
1911. COLLETT, ANTHONY KEELING; 5 Stone Buildings, Lincoln's Inn, W.C. 2.
- 85 1904. COLLIER, CHARLES, F.Z.S.; Bridge House, Culmstock, Devon; and Windham Club, St. James' Square, S.W. 1.
1916. COLTART, Dr. HENRY NEVILLE; Field House, Epsom, Surrey.
1909. CONGREVE, Major WILLIAM MAITLAND (R.A.); The Forest, Kerry, Montgomeryshire.
1913. COOK, JAMES PEMBERTON; Kyambu, British East Africa.
1888. CORDEAUX, Major WILLIAM WILFRID (late 21st Lancers); Hopebourne, Harbledown, Canterbury, Kent.
- 90 1914. COURTOIS, The Rev. F. L., S.J.; Curator of the Sikawei Museum, near Shanghai, China.
1913. COWAN, FRANCIS; Wester Lea, Murrayfield, Midlothian.
1894. CREWE, Sir VAUNCEY HARPUR, Bt.; Calke Abbey, Derby.
1917. CUNNINGHAM, JOSIAS, R.N.V.R.; Fernhill, Belfast.
1916. CURRIE, ALGERNON JAMES; Southlands, Winchester Road, Worthing, Sussex; and c/o Messrs. A. Scott & Co., Rangoon, Burma.
- 95 1915. CURRIE, ROBERT ALEXANDER (Chinese Customs); The Custom House, Yochow, by Hankow, China.
1899. CURTIS, FREDERICK, F.R.C.S.; Lyndens, Redhill, Surrey.
1896. DANFORD, Major BERTRAM W. Y., R.E.; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.
1883. DAVIDSON, JAMES, F.Z.S.; 32 Drumsheugh Gardens, Edinburgh.
1905. DAVIS, K. J. ACTON, M.C., F.R.C.S., F.Z.S.; 24 Upper Berkeley Street, W. 1.
- 100 1909. DELMÉ-RADCLIFFE, Capt. ALFRED (105th Maratha Light Infantry); c/o Messrs. Cox & Co., Bombay, India.
1902. DENT, CHARLES HENRY; c/o Messrs. Barclay & Co. Ltd., Darlington, Durham.

Date of
Election.

1916. DESPOTT, GIUSEPPE, Curator of the Natural History Museum,
The University, Malta.
1893. DE WINTON, WILLIAM EDWARD, F.Z.S. ; Southover Hall,
Burwash, Sussex.
1896. DOBBIE, JAMES BELL, F.R.S.E., F.Z.S. ; 12 South Inverleith
Terrace, Edinburgh.
- 105 1889. DOBIE, WILLIAM HENRY, M.R.C.S. ; 2 Hunter Street,
Chester.
1904. DRAKE-BROCKMAN, RALPH EVELYN, M.R.C.S., L.R.C.P.,
F.Z.S. ; c/o Messrs. Grindlay & Co., 54 Parliament Street,
S.W. 1.
1913. DRUMMOND, JAMES, F.L.S., F.Z.S. ; 'Lyttelton Times,'
Christchurch, New Zealand.
1890. DRUMMOND-HAY, Col. JAMES A. G. R.- (Coldstream Guards) ;
Seggieden, by Perth.
1904. DUCKWORTH, GEORGE HERBERT ; Dalingridge Place, *viâ* East
Grinstead, Sussex.
- 110 1878. DURNFORD, W. ARTHUR, J.P. ; Elsecar, Barnsley, Yorks.
1903. EARLE, EDWARD VAVASOUR ; 47 Lancaster Gate, W. 2.
1914. EDWARDS, LAURENCE ALBERT CURTIS, M.A.
1895. ELLIOT, EDMUND A. S., M.R.C.S. ; Woodville, Kingsbridge,
South Devon.
1884. ELLIOTT, ALGERNON, C.I.E. ; 16 Belsize Grove, Hamp-
stead, N.W. 3.
- 115 1902. ELLISON, The Rev. ALLAN, M.A. ; Althorpe Rectory, Doncaster,
Yorks.
1866. ELWES, HENRY JOHN, F.R.S., F.Z.S. ; Colesborne, Cheltenham,
Gloucestershire.
1914. ETHERIDGE, ROBERT, Junr., C.M.Z.S. ; Curator of the
Australian Museum, Sydney, New South Wales,
Australia.
1879. EVANS, ARTHUR HUMBLE, M.A., F.Z.S. ; 9 Harvey Road,
Cambridge.
1888. EVANS, WILLIAM, F.R.S.E. ; 38 Morningside Park, Edin-
burgh.
- 120 1916. EZRA, ALFRED, F.Z.S. ; 110 Mount Street, W. 1.
1892. FAIRBRIDGE, WILLIAM GEORGE ; 141 Long Market Street,
Capetown, South Africa.
1916. FALKINER, Capt. JOHN MCINTIRE, I.M.S., F.R.C.S. ; 22 St.
Stephen's Green, Dublin.

Date of
Election.

1909. FANSHAWE, Capt. RICHARD D. (late Scots Guards); Broxmore, Cavendish Road, Bournemouth.
1894. FARQUHAR, Rear-Admiral ARTHUR MURRAY, C.V.O.; Granville Lodge, Aboyne, Aberdeenshire.
- 125 1898. FARQUHAR, Capt. STUART ST. J., R.N.; Naval & Military Club, Piccadilly, W. 1.
1873. FEILDEN, Col. HENRY WEMYSS, C.B., C.M.Z.S.; Burwash, Sussex; and Junior United Service Club, S.W. 1.
1908. FINCH-DAVIES, CLAUDE G. (1st S. African Mounted Riflemen); Windhuk, S.W.A. Protectorate.
1901. FINLINSON, HORACE W., F.Z.S.; 5 Rosamond Road, Bedford.
1885. FITZHERBERT-BROCKHOLES, WILLIAM JOSEPH; Claughton Hall, Garstang, Lancashire.
- 130 1902. FLOWER, Major STANLEY SMYTH, F.Z.S.; Kedah House, Zoological Gardens, Giza, Egypt.
1912. FLOYD, JAMES FRANCIS MURRAY, B.A.; The University, Glasgow.
1912. FOSTER, ARTHUR H., M.R.C.S., L.R.C.P.; Sussex House, 88 Tilehouse Street, Hitchin, Herts.
1903. FOSTER, NEVIN HARKNESS, F.L.S., M.R.I.A.; Hillsborough, Co. Down, Ireland.
1880. FOSTER, WILLIAM; 39 Colville Gardens, Bayswater, W. 11.
- 135 1887. FOWLER, WILLIAM WARDE, M.A.; Lincoln College, Oxford.
1805. FOX, The Rev. HENRY ELLIOTT, M.A.; The Croft, Lytton Grove, Putney Hill, S.W. 15.
1881. FREKE, PERCY EVANS; South Point, Limes Road, Folkestone.
1895. FROHAWK, FREDERICK WILLIAM, F.E.S.; Uplands, Thundersley, Essex.
1909. FROST, WILLIAM EDWARD, J.P.; Ardvreck, Crieff, Perthshire.
- 140 1881. GADOW, HANS, Ph.D., F.R.S., F.Z.S.; Cleramendi, Great Shelford, near Cambridge.
1886. GAINSBOROUGH, CHARLES WILLIAM FRANCIS, Earl of; Exton Park, Oakham, Rutland.
1907. GANDOLFI, ALFONSO OTHO GANDOLFI-HORNYOLD, Duke, Ph.D.; Blackmore Park, Hanley Swan, Worcestershire.
1900. GARNETT, CHARLES, F.Z.S.; Greathouse, Chippenham, Wilts; and New University Club, St. James's Street, S.W. 1.
1892. GERRARD, JOHN; Silverdale, Worsley, near Manchester, Lancs.
- 145 1902. GIBBINS, WILLIAM BEVINGTON, F.Z.S.; Ettington, Stratford-on-Avon, Warwickshire.

Date of
Election.

1879. GIBSON, ERNEST, F.L.S., F.Z.S., F.R.G.S.; c/o Señores Lockwood y Cia, 654 Rivadavia, Buenos Ayres.
1902. GILLMAN, ARTHUR RILEY; Heath Vale, Farnham, Surrey.
1903. GLADSTONE, Capt. HUGH STEUART, M.A., F.Z.S., F.R.S.E., F.S.A.Scot.; Capenoch, Thornhill, Dumfriesshire; and 40 Lénnox Gardens, S.W. 1.
1908. GODMAN, Lt.-Col. EDWARD SHIRLEY (2nd Dorset Regiment); Hampsteel, Cowfold, Sussex.
- 150 *1858. GODMAN, FREDERICK DuCANE, D.C.L., F.R.S., F.Z.S.; 45 Pont Street, S.W. 1; and South Lodge, Horsham, Sussex. (*Gold Medallist.*)
- *1858. GODMAN, PERCY SANDEN, B.A., C.M.Z.S.; Hampsteel, Cowfold, Sussex. (*Gold Medallist.*)
1906. GOODALL, JEREMIAH MATTHEWS; The Nest, Bembridge, Isle of Wight.
1900. GOODFELLOW, WALTER, F.Z.S.; The Poplars, Kettering, Northants.
1906. GORDON, SETON PAUL, F.Z.S.; Auchintoul, Aboyne, Aberdeenshire.
- 155 1912. GOSSE, Capt. PHILIP, M.R.C.S., L.R.C.P., R.A.M.C.; Curtlemead, Beaulieu, Hants.
1899. GOULD, FRANCIS HERBERT CARRUTHERS, F.Z.S.; Matham Manor House, East Molesey, Surrey.
1895. GRABHAM, OXLEY, M.A.; The Museum, York.
1909. GRANT, CLAUDE HENRY BAXTER, F.Z.S. (6th Battn. Rifle Brigade); 2 Lebanon Gardens, West Hill, Wandsworth, S.W. 18; and Sports Club, St. James' Square, S.W. 1.
1918. GRANT, FRANCIS; Dept. Public Works, 14 Churchill Road, Rangoon, Burma.
- 160 1913. GREENING, LINNÆUS, F.L.S., F.Z.S.; Fairlight, Grappenhall, Cheshire.
1909. GREY OF FALLODEN, The Rt. Hon. EDWARD, The Viscount, K.G., P.C., F.Z.S.; Falloden, Christon Bank, R.S.O., Northumberland.
1906. GRIFFITH, ARTHUR FOSTER; 59 Montpellier Road, Brighton, Sussex.
1885. GUILLEMARD, FRANCIS HENRY HILL, M.A., M.D., F.Z.S.; Old Mill House, Trumpington, Cambridge.
1908. GURNEY, GERARD HUDSON, F.Z.S., F.E.S.; Keswick Hall, Norwich, Norfolk.

Date of
Election.

- 165 1870. GURNEY, JOHN HENRY, F.Z.S.; Keswick Hall, Norwich; and Athenæum Club, Pall Mall, S.W. 1.
1896. GURNEY, ROBERT, F.Z.S.; Ingham Old Hall, Stalham, Norfolk.
1891. HAIGH, GEORGE HENRY CATON, F.Z.S.; Grainsby Hall, Great Grimsby, Lincolnshire.
1887. HAINES, JOHN PLEYDELL WILTON; 17 King Street, Gloucester.
1898. HALE, The Rev. JAMES RASHLEIGH, M.A.; Boxley Vicarage, Maidstone, Kent.
- 170 1905. HAMERTON, Lt.-Col. Albert Edward, D.S.O., R.A.M.C., F.Z.S.; c/o Messrs. Holt & Co., 3 Whitehall Place, S.W. 1.
1913. HARDY, Capt. ERNEST CLIFFORD, R.N.; Hydrographic Department, Admiralty, Whitehall, S.W. 1.
1900. HARPER, EDMUND WILLIAM, F.Z.S.; P.O. Box 86, Calcutta, India.
1900. HARRIS, HENRY EDWARD.
1893. HARTERT, ERNST J. O., Ph.D., F.Z.S.; The Zoological Museum, Tring, Herts.
- 175 1868. HARTING, JAMES EDMUND, F.Z.S.; Portmore Lodge, Weybridge, Surrey.
1893. HARTMANN, WILLIAM; Milburn, Esher, Surrey.
1900. HASLUCK, PERCY PEDLEY HARFORD; The Wilderness, Southgate, N.
1898. HAWKER, RICHARD MACDONNELL, F.Z.S.; Bath Club, Dover Street, W. 1; and c/o Messrs. Dalgety & Co., 96 Bishopsgate, E.C. 2.
1905. HAWKSHAW, JOHN CLARKE, M.A., M.I.C.E., F.G.S.; Hollycombe, Liphook, Hants; and 33 Great George Street, Westminster, S.W. 1.
- 180 1905. HEADLEY, FREDERICK WEBB, M.A., F.Z.S.; Haileybury College, Hertford.
1918. HERBERT, Lieut. EDWARD GREVILLE, R.A.F.; c/o Messrs. Cox & Co., R.A.F. Branch, 111 St. Martin's Lane, W.C. 2.
1902. HETT, GEOFFREY SECCOMBE, M.B., F.Z.S.; 8 Wimpole Street, W. 1.
1913. HEWITT, JOHN, M.A.; Director of the Albany Museum, Grahamstown, South Africa.
1900. HILLS, Lt.-Col. JOHN WALLER; 98 Mount Street, W. 1.

Date of
Election.

- 185 1884. HOLDSWORTH, CHARLES JAMES, J.P. ; Fernhill, Alderley Edge, Cheshire.
1912. HONY, GEORGE BATHURST ; 4 Beaufort Road, Clifton, Bristol.
1905. HOPKINSON, EMILIUS, M.B., D.S.O., F.Z.S. ; 45 Sussex Square, Brighton, Sussex ; and South Bank Province, Gambia, West Africa.
1916. HOPWOOD, CYRIL (Indian Forests) ; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.
1888. HORSFIELD, HERBERT KNIGHT ; Crescent Hill, Filey, Yorks.
- 190 1895. HOWARD, HENRY ELIOT, F.Z.S. ; Clarelands, near Stourport, Worcestershire. (*Committee.*)
1881. HOWARD, ROBERT JAMES ; Shearbank, Blackburn, Lancashire.
1911. HUDSON, EDWARD ; 15 Queen Anne's Gate, S.W. 1.
1911. HUDSON, REGINALD ; 16 Warwick Road, Stratford-on-Avon.
1918. INGLIS, CHARLES MALCOLM ; Baghownie Factory, Laheria, Serai P.O. Behar, India.
- 195 1901. INGRAM, Capt. COLLINGWOOD, F.Z.S. ; Forest House, Westgate-on-Sea, Kent.
1902. INNES BEY, Dr. WALTER FRANCIS ; Curator of the Zoological Museum, School of Medicine, Cairo, Egypt.
1913. IREDALE, TOM ; 39 Northcote Avenue, Ealing, W. 5.
1888. JACKSON, Sir FREDERICK JOHN, C.B., K.C.M.G., F.L.S., F.Z.S. ; The Red House, Aldeburgh, Suffolk.
1892. JAMES, HENRY ASHWORTH, F.Z.S. ; Hurstmonceux Place, Hailsham, Sussex.
- 200 1896. JESSE, WILLIAM, B.A., F.Z.S. ; Meerut College, Meerut, India.
1891. JOHNSTON, Sir HARRY HAMILTON, G.C.M.G., K.C.B., F.Z.S. ; St. John's Priory, Poling, near Arundel, Sussex.
1905. JOHNSTONE, EDWIN JAMES, F.Z.S. ; Burrswood, Groombridge, Sussex ; and Junior Carlton Club, Pall Mall, S.W. 1.
1900. JONES, Major HENRY, F.Z.S. (late 62nd Regt.) ; 41 Vineyard Hill Road, Wimbledon Park, S.W. 19.
1909. JONES, Fleet-Surgeon KENNETH HURLSTONE, M.B., Ch.B., F.Z.S., R.N. ; Medical Transport Office, Royal Naval Barracks, Chatham.
- 205 1899. JOURDAIN, The Rev. FRANCIS CHARLES ROBERT, M.A. ; Appleton Rectory, Abingdon, Berks.

Date of
Election.

1902. JOY, NORMAN HUMBERT, M.R.C.S., L.R.C.P.; Theale, Berks.
1880. KELHAM, Brigadier-General HENRY ROBERT, C.B. (late Highland Light Infantry); Army and Navy Club, Pall Mall, S.W. 1.
1894. KELSALL, Lt.-Col. HARRY JOSEPH, R.A.; c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.
1897. KELSALL, The Rev. JOHN EDWARD, M.A.; Milton Rectory, New Milton, Hants.
- 210 1904. KELSO, JOHN EDWARD HARRY, M.D.; Braeside, Edgewood, Lower Arrow Lake, British Columbia.
1914. KENNEDY, JOHN NOBLE, M.C., R.G.A.; The Manse, Port Patrick, Wigtownshire, Scotland; and c/o Messrs. Cox & Co., 16 Charing Cross, S.W. 1.
1891. KERR, JOHN GRAHAM, F.R.S., F.Z.S., Regius Professor of Zoology; 9 The University, Glasgow.
1895. KINGSFORD, WILLIAM EDWARD; Cairo, Egypt.
1902. KINNEAR, NORMAN BOYD, C.M.Z.S.; Bombay Natural History Society, 6 Apollo Street, Bombay, India.
- 215 1910 KLOSS, CECIL BODEN, F.Z.S., F.R.A.I.; Assistant Director of Museums, Kuala Lumpur, Federated Malay States.
1892. LAIDLAW, THOMAS GEDDES; Bank of Scotland House, Duns, Berwickshire.
1913. LAMBERT, GODFREY CHARLES; Woodcote, Esher, Surrey.
1917. LAMPARD-VACHELL, BENJAMIN GARNET; 49 Knightsbridge, S.W. 1.
1884. LANGTON, HERBERT; St. Moritz, 61 Dyke Road, Brighton, Sussex.
- 220 1881. LASCELLES, The Hon. GERALD WILLIAM, F.Z.S.; Tillington House, Petworth, Sussex.
1892. LA TOUCHE, JOHN DAVID DIGUES, C.M.Z.S.; c/o Custom House, Shasi, Hupeh Province, China.
1910. LEMON, MRS. MARGARETTA LOUISA, F.Z.S.; Hillcrest, Redhill, Surrey.
1898. LE SOUËF, DUDLEY, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.
1897. LILFORD, JOHN, Lord, F.Z.S.; Lilford Hall, Oundle, Northants.
- 225 1909. LINGS, GEORGE HERBERT; Richmond Hill, Cheadle, Cheshire.

Date of
Election.

1897. LODGE, GEORGE EDWARD, F.Z.S.; 5 The Studios, Thurloe Square, S.W. 7.
1908. LONG, SYDNEY HERBERT, M.D., F.Z.S.; 31 Surrey Street, Norwich, Norfolk.
1904. LOWE, Capt. PERCY R., B.A., M.B., B.C., R.A.M.C.; No. 15 Princess Christian Ambulance Train, B.E.F., France.
1914. LOWE, WILLOUGHBY PRESCOTT; Gorsemoor, Throwleigh, Okehampton, Devon.
- 230 1904. LYNES, Captain HUBERT, C.B., C.M.G., R.N.; H.M.S. 'Warspite,' c/o G.P.O., London.
1905. MCGREGOR, PETER JAMES COLQUHOUN; 43 Castle Street, Edinburgh.
1917. MACKENZIE, JOHN MITCHELL DOUGLAS, B.A., C.M.Z.S., Indian Forest Service; c/o Thos. Cook & Son, Rangoon, Burma, India; 6 The Circus, Bath.
1916. MACKWORTH-PRAED, CYRIL W. (Scots Guards); Oriulton, Pembroke.
1897. McLEAN, JOHN CHAMBERS; Waiamu, Puha (*viâ* Gisborne), New Zealand.
- 235 1899. MACMILLAN, GEORGE AUGUSTIN, F.Z.S.; 27 Queen's Gate Gardens, S.W. 7.
1906. MACMILLAN, WILLIAM EDWARD FRANK; 42 Onslow Square, S.W. 7.
1894. MACPHERSON, ARTHUR HOLTE, F.Z.S.; 21 Campden Hill Square, Kensington, W. 8.
1906. MAGRATH, Lt.-Col. HENRY AUGUSTUS FREDERICK (51st Sikhs, F.F.); c/o Messrs. H. S. King & Co., 9 Pall Mall, S.W. 1.
1917. MALCOMSON, HERBERT THOMAS; Glenorchy, Knock, Belfast.
- 240 1917. MANN, Capt. EDWARD HAMILTON, M.C., R.H.A.; Junior United Service Club, Charles Street, S.W. 1.
1907. MANN, THOMAS HUGH, F.Z.S.; Trulls Hatch, Rotherfield, Sussex.
1904. MAPLETON-BREE, HARVEY WILLIAM, B.A.; Gable End, Allesley, Coventry.
1894. MARSHALL, ARCHIBALD McLEAN, F.Z.S.; Great Chitcombe, Brede, Sussex.
1894. MARSHALL, JAMES McLEAN, F.Z.S.; Bleaton Hallet, Blairgowrie, Perthshire.
- 245 1898. MASSEY, HERBERT; Ivy Lea, Burnage, Didsbury, Manchester.

Date of
Election.

1907. MATHEWS, GREGORY MACALISTER, F.L.S., F.R.S.E., F.Z.S.;
Foulis Court, Fair Oak, Hants. (*Committee.*)
1915. MATON, EUSTACE BERTIE; Enford, Pewsey, Wilts.
1915. MAY, WILLIAM NORMAN, M.D.; The White House, Sonning,
Berks.
1883. MEADE-WALDO, EDMUND GUSTAVUS BLOOMFIELD, F.Z.S.;
Hever Warren, Hever, Kent.
- 250 1912. MEIKLEJOHN, Major RONALD FORBES, D.S.O. (1st Bn. Royal
Warwickshire Regt.); 38 Queen's Gate Gardens,
S.W. 1.
1899. MEINERTZHAGEN, Major RICHARD, F.Z.S. (Royal Fusiliers);
69 Bedford Gardens, Campden Hill, W. 8.
1886. MILLAIS, JOHN GUILLE, F.Z.S.; Compton's Brow, Horsham,
Sussex.
1916. MILLARD, WALTER SAMUEL, F.Z.S.; Bombay Natural
History Society, 6 Apollo Street, Bombay, India.
1903. MILLS, The Rev. HENRY HOLROYD, M.A., F.Z.S.; The
Rectory, St. Stephen-in-Brannel, Grampound Road,
Cornwall.
- 255 1879. MITCHELL, FREDERICK SHAW; Hornshaws, Millstream,
B.C., Canada.
1901. MITCHELL, P. CHALMERS, M.A., D.Sc., LL.D., F.R.S., F.L.S.,
F.Z.S.; Secretary to the Zoological Society of London,
Regent's Park, N.W. 8.
1914. MOULTON, JOHN CONEY, F.Z.S.; Fort Canning, Singapore,
Straits Settlements.
1886. MUIRHEAD, GEORGE, F.R.S.E.; Speybank, Fochabers,
Morayshire.
1893. MULLENS, Major WILLIAM HERBERT, M.A., LL.M., F.Z.S.;
Westfield Place, Battle, Sussex.
- 260 1892. MUNN, PHILIP WINCHESTER, F.Z.S.; Stourwood Cottage,
Stourwood Avenue, Southbourne, Hants.
1918. MUNT, HARRY RAYMOND; 10 Ashburn Place, South Kensington,
S.W. 7.
1897. MUNT, HENRY, F.Z.S.; 10 Ashburn Place, South Kensington,
S.W. 7.
1911. MURRAY, Capt. EDWARD MACKENZIE; Woodside, Coupar-
Angus, Perthshire.
1910. MURRAY, Capt. HERBERT WILLAUME, F.Z.S.; The Old House,
Epsom, Surrey.

Date of
Election.

- 265 1907. NEAVE, SHEFFIELD AIREY, M.A., B.Sc., F.Z.S.; 24 De Vere Gardens, Kensington, W. 8.
1895. NESHAM, ROBERT, F.Z.S., F.E.S.; Utrecht House, Poynder's Road, Clapham Park, S.W. 4.
1904. NEWMAN, THOMAS HENRY, F.Z.S.; Newlands, Harrowdene Road, Wembley, Middlesex.
1917. NICHOLL, ARCHIBALD M. C.; Royal Naval College, Osborne, Isle of Wight.
1902. NICHOLS, JOHN BRUCE, F.Z.S.; Parliament Mansions, Victoria Street, S.W. 1.
- 270 1900. NICHOLS, WALTER BUCHANAN; Stour Lodge, Bradfield, Manningtree, Essex.
1876. NICHOLSON, FRANCIS, F.Z.S.; Ravenscroft, Windermere, Westmoreland.
1902. NICOLI, MICHAEL JOHN, F.Z.S.; Valhalla House, Zoological Gardens, Giza, Egypt.
1890. OGILVIE-GRANT, WILLIAM ROBERT, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W. 7.
1889. OGLE, BERTRAM SAVILE; Hill House, Steeple Aston, Oxon.
- 275 1907. OLDHAM, CHARLES, F.Z.S.; The Bollin, Shrublands Road, Berkhamsted, Herts.
1906. OSMASTON, BERTRAM BERESFORD (Imperial Forest Service); Dehra Dun, India.
1913. OWEN, JOHN HUGH; Old School House, Felsted, Essex.
1883. PARKER, HENRY, C.E.; 26 St. George's Road, St. Annes-on-the-Sea, Lanes.
1880. PARKIN, THOMAS, M.A., F.L.S., F.Z.S.; Fairseat, High Wickham, Hastings, Sussex.
- 280 1908. PATON, EDWARD RICHMOND, F.Z.S.; Hareshawmuir, By Kilmarnock, Ayrshire, Scotland.
1891. PATTERSON, ROBERT, F.L.S., M.R.I.A.; Glenbank, Holywood, Co. Down, Ireland.
1911. PATTERSON, WILLIAM HARRY; 25 Queen's Gate Gardens, S.W. 7.
1904. PEARSE, THEED; Courtenay, British Columbia.
1894. PEARSON, CHARLES EDWARD, F.L.S.; Hillcrest, Lowdham, Notts.
- 285 1902. PEASE, SIR ALFRED EDWARD, Bt., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire; and Brooks's Club, St. James's Street, S.W. 1.

Date of
Election.

1891. PENROSE, FRANCIS GEORGE, M.D., F.Z.S.; Rathkeale,
51 Surrey Road, Bournemouth.
1900. PERCIVAL, ARTHUR BLAYNEY, F.Z.S.; Game Ranger, Nairobi,
British East Africa; Sports Club, St. James' Square,
S.W. 1.
1912. PERSHOUSE, Major STANLEY (1st Border Regt.); Cuil Park,
Bridge of Dee, Castle Douglas, Scotland.
1886. PHILLIPS, ETHELBERT LÖRT, F.Z.S.; 79 Cadogan Square,
S.W. 1.
- 290 1893. PIGOTT, Sir THOMAS DIGBY, C.B.; The Lodge, Lower
Sheringham, Norfolk.
1914. PITMAN, Capt. CHARLES ROBERT SENHOUSE (27th Punjabis);
Drewton, Chelston, Torquay.
1908. PLAYER, W. J. PERCY; Wernfadog, Clydach, R.S.O., Glamor-
ganshire.
1907. POCKOCK, REGINALD INNES, F.R.S., F.L.S., F.Z.S.; Superintendent
of the Zoological Gardens, Regent's Park, N.W. 8.
1917. POLIAKOV, GREGORY T. (Editor 'Messenger Ornithologique');
Moskva-Nijninogorod Railway, Station Obiralovka,
Savvino, Russia.
- 295 1905. POLLARD, Lt.-Col. ARTHUR ERSKINE ST. VINCENT (The Border
Regiment); c/o Mrs. A. Pollard, Heatherlands, Lilliput,
Dorset.
1896. POPHAM, HUGH LEYBORNE, M.A.; Houndstreet House, Pens-
ford, Somerset.
1898. PRICE, ATHELSTAN ELDER, F.Z.S.; 4 Mincing Lane, E.C. 3.
1901. PROUD, JOHN T.; Dellwood, Bishop Auckland, Durham.
1893. PYCRAFT, WILLIAM PLANE, F.Z.S.; British Museum (Natural
History), Cromwell Road, S.W. 7.
- 300 1903. RALFE, PILCHER GEORGE; The Parade, Castletown, Isle
of Man.
1903. RATCLIFF, FREDERICK ROWLINSON; 29 Connaught Square,
W. 2.
1917. RATTRAY, Col. RULLION HARE (retired); 68 Dry Hill Park
Road, Tonbridge.
1917. RAW, WILLIAM, Warrant Officer R.N.R., H.M. Wireless
Station, Abu Zabal, Caliubia, Lower Egypt; Whitfield
House, Goathland S.O., Yorkshire.
1879. RAWSON, HERBERT EVELYN; Comyn Hill, Ilfracombe, N.
Devon.

Date of
Election.

- 305 1894. READ, RICHARD HENRY, M.R.C.S., L.R.C.P.; Church Street,
Hanley, Staffordshire.
1888. READ, ROBERT H.; 8a South Parade, Bedford Park,
W. 4.
1917. REEVE, Capt. JOHN SHERARD (Grenadier Guards), F.Z.S.;
Leadenham House, near Lincoln,
1903. RENAUT, WILLIAM E.; Royal Academy of Music, York Gate,
Marylebone Road, N.W. 1.
1908. RICHARDSON, NORMAN FREDERIC, F.R.G.S.; "Lynton,"
Brigstock Road, Thornton Heath, Surrey.
- 310 1907. RICHMOND, HERBERT WILLIAM, M.A., F.R.S.; King's College,
Cambridge.
1895. RICKETT, CHARLES BOUGHEY, F.Z.S.; 27 Kendrick Road,
Reading, Berks.
1896. RIPPON, Lt.-Col. GEORGE, F.Z.S.; United Service Club, Pall
Mall, S.W. 1.
1907. RITCHIE, ARCHIBALD THOMAS AYRES.
1902. RIVIÈRE, BERNARD BERYL, F.R.C.S.; St. Giles's Plain,
Norwich, Norfolk.
- 315 1898. ROBINSON, HERBERT C., C.M.Z.S.; Selangor State Museum,
Kuala Lumpur, Federated Malay States.
1912. ROBINSON, HERBERT WILLIAM, F.Z.S.Scot.; Patchetts, Caton,
near Lancaster.
1917. ROBINSON, SYDNEY MADDOCK; c/o Col. J. H. Evans, Fraser
Road, Rangoon, Burma.
1896. ROGERS, Lt.-Col. JOHN MIDDLETON, D.S.O., F.Z.S. (late
1st Dragoons); Riverhill, Sevenoaks, Kent.
1913. ROGERS, REGINALD NANKIVELL; Carwinion, near Falmouth,
Cornwall.
- 320 1893. ROTHSCHILD, LIONEL WALTER, Lord, D.Sc., Ph.D., F.R.S.,
F.Z.S.; Zoological Museum, Tring, Herts. (*Committee.*)
1894. ROTHSCHILD, The Hon. NATHANIEL CHARLES, M.A., F.Z.S.;
Arundel House, Kensington Palace Gardens, W. 8.
1918. ROWAN, WILLIAM; Bedales School, Petersfield, Hants.
1907. RUSSELL, Capt. CONRAD GEORGE EDWARD, F.Z.S. (Beds.
Yeomanry); 2 Audley Square, W. 1.
1910. RUSSELL, HAROLD, F.Z.S.; 16 Beaufort Gardens, Chelsea,
S.W. 3.
- 325 1883. ST. QUINTIN, WILLIAM HERBERT, F.Z.S.; Scampston Hall,
Rillington, Yorkshire.

Date of
Election.

1903. SANDEMAN, Lt.-Col. ROBERT PRESTON (R. Gloucester Hussars);
Dan-y Parc, Crickhowell, S. Wales.
1889. SAPSWORTH, ARNOLD DUER, F.Z.S.; 30 Sussex Place, Regent's
Park, N.W. 1.
1902. SARGEANT, ARTHUR ST. GEORGE; Exbury, Padstow,
Cornwall.
1904. SARGENT, JAMES; 76 Jermyn Street, S.W. 1.
- 330 1914. SAUER, Dr. HANS, F.Z.S.; Bath Club, Dover Street, W. 1.
1909. SAVAGE, The Rev. ERNEST URMSON; The Vicarage, Levens,
Milnthorpe, Westmoreland.
1891. SCLATER, WILLIAM LUTLEY, M.A., F.Z.S.; 10 Sloane Court,
Chelsea, S.W. 1. (*Editor.*)
1908. SEPPINGS, Major JOHN WILLIAM HAMILTON, A.P.D.; The
Castle, Cape Town, South Africa.
1899. SERLE, The Rev. WILLIAM, M.A., B.D.; The Manse, Dudding-
ston, Edinburgh.
- 335 1901. SETH-SMITH, DAVID, F.Z.S.; 34 Elsworthy Road, South
Hampstead, N.W. 3.
1904. SETH-SMITH, LESLIE MOFFAT, B.A., F.Z.S.; Tangley,
Caterham Valley, Surrey; and Kampala, Uganda.
1909. SETON, MALCOLM COTTER CARISTON; 13 Clarendon Road, Holland
Park, W. 11; and Union Club, Trafalgar Square, S.W. 1.
1899. SHARMAN, FREDERIC, F.Z.S.; 47 Goldington Road, Bedford.
1865. SHEPHERD, The Rev. CHARLES WILLIAM, M.A., F.Z.S.; Trottis-
cliffe Rectory, Maidstone, Kent.
- 340 1917. SHIPTON, Capt. WILLIAM, M.B., B.C., R.A.M.C.; 2 The Square,
Buxton, Derbyshire.
1918. SLADEN, Major ALEXANDER GEORGE LAMBART; 30 Barkston
Gardens, S.W. 5; and Junior Carlton Club, S.W. 1.
1908. SMALLEY, FREDERIC WILLIAM, F.Z.S.; Cove Hall, North Cove,
near Beccles, Suffolk.
1918. SMEED, Major CECIL WILLIAM, R.F.A.; Tyes Cross, Sharp-
thorne, East Grinstead, Sussex.
1914. SMITH, Major JOHN LINDSAY (Indian Army); Supply &
Transport Corps, Commdt. Camel Corps, Multan, Punjab,
India.
- 345 1918. SMITH, THOMAS; Whiston Eaves, Froghall, Stoke-on-
Trent.
1906. SNOUCKAERT VAN SCHAUBURG, Baron RENÉ CHARLES; Doorn,
Holland.

Date of
Election.

1903. SPARROW, Lt.-Col. RICHARD, F.Z.S. (7th Dragoon Guards);
Rookwoods, Sible Hedingham, Essex.
1906. STANFORD, Staff-Surgeon CHARLES EDWARD CORTIS, B.Sc.,
M.B., R.N.
1910. STANFORD, EDWARD FRASER; c/o Messrs. Edward Stanford,
Ltd., 12-14 Long Acre, W.C. 2.
- 350 1913. STANFORD, Major HENRY MORRANT, R.F.A., 115 Battery,
B.E.F., France; c/o Messrs. Edward Stanford, Ltd.,
12-14 Long Acre, W.C. 2.
1913. STANFORD, JOHN KEITH; c/o Messrs. Edward Stanford, Ltd.,
12-14 Long Acre, W.C. 2.
1915. STAPLES-BROWNE, Capt. RICHARD CHARLES, B.A., F.Z.S.
(New Zealand Med. Corps); Brashfield House, Bicester,
Oxon.
1900. STARES, JOHN WILLIAM CHESTER; Portchester, Hants.
1902. STENHOUSE, JOHN HUTTON, M.B., R.N.; Royal Naval Hospital,
Plymouth.
- 355 1910. STEVENS, HERBERT; Gopaldhara, Mirik P.O., Kurseong,
Darjiling Himalayan Rly., India.
1906. STEWARD, EDWARD SIMMONS, F.R.C.S.; 30 Victoria Avenue,
Harrogate, Yorks.
1914. STEWART, JOHN; Mainshill, Beith, Ayrshire.
1917. STONEHAM, Capt. HUGH FREDERIC (1st Battn. East Surrey
Regt.); "Stoneleigh," Reigate, Surrey; and Signal
Service, R.E.
1881. STUDDY, Col. ROBERT WRIGHT (late Manchester Regiment);
Waddeton Court, Brixham, Devon.
- 360 1918. STURGE, ARTHUR LLOYD; Shepherd's Green, Chislehurst, Kent.
1887. STYAN, FREDERICK WILLIAM, F.Z.S.; Stone Street, near
Sevenoaks, Kent.
1914. SUTHERLAND, LEWIS ROBERTSON, M.B., C.M., Medical School,
Dundee, N.B.; Wellgate House, West Newport, Fife-
shire.
1907. SWANN, GEOFFREY; 11 Onslow Crescent, S.W. 7.
1905. SWANN, HAROLD, F.Z.S.; 9 Evelyn Gardens, S.W. 7.
- 365 1887. SWINBURNE, JOHN.
1882. SWINHOE, Col. CHARLES, M.A., F.L.S., F.Z.S.; 4 Gunterstone
Road, West Kensington, W. 14.
1884. TAIT, WILLIAM CHASTER, F.Z.S.; Entre Quintas 155, Oporto,
Portugal.

Date of
Election.

1911. TALBOT-PONSONBY, CHARLES GEORGE; 5 Crown Office Row, Temple, E.C. 4.
1911. TATTON, REGINALD ARTHUR; Cuerden Hall, Bamber Bridge, Preston, Lancs.
- 370 1914. TAVISTOCK, HASTINGS WILLIAM SACKVILLE, Marquis of, F.Z.S.; Warblington House, Havant.
1905. TAYLOR, LIONEL EDWARD, F.Z.S.; Bankhead, Kelowna, British Columbia.
1886. TERRY, Major HORACE A. (late Oxfordshire Light Infantry); Compton Grange, Compton, Guildford, Surrey.
1916. THOMASSET, BERNARD CHARLES, F.Z.S.; The Manor House, Ashmansworth, near Newbury, Berks.
1904. THOMPSON, Major WILLIAM R., R.G.A.; Ravello, Carlton Road, Weymouth.
- 375 1911. THOMSON, A. LANDBOROUGH, M.A.; Castleton House, Old Aberdeen, Scotland.
1900. THORBURN, ARCHIBALD, F.Z.S.; Hascombe, Godalming, Surrey.
1893. THORPE, DIXON L.; Loshville, Etterby Scaur, Carlisle, Cumberland.
1903. TICEHURST, CLAUD BUCHANAN, M.A., M.D., M.R.C.S.; Grove House, Lowestoft, Suffolk.
1894. TICEHURST, NORMAN FREDERIC, M.A., M.B., F.R.C.S., F.Z.S.; 24 Pevensey Road, St. Leonards-on-Sea, Sussex.
- 380 1902. TOWNSEND, REGINALD GILLIAT, M.A.; Buckholt, West Tytherley, Salisbury, Wilts.
1914. TREATT, CHAPLIN COURT; British Museum (Natural History), Cromwell Road, S.W. 7.
1893. TREVOR-BATTYE, AUBYN, M.A., F.L.S., F.Z.S.; Ashford Chace, Petersfield, Hants; and Royal Societies Club, St. James's Street, S.W. 1.
1913. TUCKWELL, EDWARD HENRY, F.Z.S.; Berthope, Compton, near Guildford, Surrey.
1911. TYRWHITT-DRAKE, HUGH GARRARD, F.Z.S.; Cobtree, Sandling, Maidstone, Kent.
- 385 1864. UPCHER, HENRY MORRIS, F.Z.S.; Sheringham Hall, Cromer, Norfolk.
1918. VAIZEY, GEORGE DE HORNE; 53 The Pryors, Hampstead, N.W. 3.
1918. VAIZEY, KER GEORGE RUSSELL; 26 Cornwall Gardens, S.W. 7.

Date of
Election.

1910. VAN SOMEREN, Dr. ROBERT ABRAHAM LOGAN ; Jinja, Uganda,
British East Africa.
1912. VAN SOMEREN, Dr. VICTOR GURNET LOGAN ; Uganda Medical
Staff, c/o Post Office, Nairobi, British East Africa.
390. 1908. VAUGHAN, MATTHEW ; The Limes, Marlborough, Wilts.
1906. VAUGHAN, Commdr. ROBERT E., R.N. ; 6 Chalfont Court,
Clarence Gate, Regent's Park, N.W. 1.
1913. VENNING, Capt. FRANCIS ESMOND WINGATE ; c/o O.C. Depot,
31st Punjabis, Rawalpindi, India.
1881. VERNER, Col. WILLIAM WILLOUGHBY COLE (late Rifle Brigade) ;
Hartford Bridge, Winchfield, Hants ; and United Service
Club, S.W. 1.
1902. WADE, EDWARD WALTER ; Melton Road, North Ferriby, East
Yorks.
- 395 1886. WADE-DALTON, Col. H. D. ; Hauxwell Hall, Finghall, R.S.O.,
Yorkshire.
1916. WAIT, WALTER ERNEST (Ceylon Civil Service) ; The Resi-
dency, Puttalam, Ceylon.
1918. WALKER, ALEXANDER HOPE, M.D., L.R.C.P., M.R.C.S. ; The
Common, Cranleigh, Surrey.
1914. WALL-ROW, JOHN ; 51 Courtfield Gardens, S.W. 5.
1895. WALLIS, HENRY MARRIAGE ; Ashton Lodge, Christchurch
Road, Reading, Berks.
- 400 1899. WALTON, Lt.-Col. HERBERT JAMES, M.D., F.R.C.S., C.M.Z.S.,
I.M.S. ; c/o Messrs. King, King & Co., P.O. Box No. 110,
Bombay, India.
1872. WARDLAW-RAMSAY, Col. ROBERT GEORGE, F.Z.S. ; Whitehill,
Rosewell, Midlothian.
1903. WATT, HUGH BOYD, F.Z.S. ; 12 Great James Street, Bedford
Row, W.C. 1.
1912. WELLS, CHARLES HENRY ; Broomfield, Brookhouse Hill,
Fulwood, Sheffield.
1912. WENNER, MAX VICTOR ; Burnside, Prestbury, near Maccles-
field, Cheshire.
- 405 1913. WHISTLER, HUGH, F.Z.S. (Indian Police) ; Caldbee House,
Battle, Sussex ; and c/o Messrs. King, King & Co., Bombay,
India.
1918. WHITAKER, Capt. JOHN ALBERT CHARLES (Coldstream Guards),
Wellington Barracks, Knightsbridge, S.W. 1.
1891. WHITAKER, JOSEPH I. S., F.Z.S. ; Malfitano, Palermo, Sicily.

Date of
Election.

1909. WHITE, HENRY LUKE; Belltrees, Scone, New South Wales, Australia.
1903. WHITE, STEPHEN JOSEPH, F.Z.S.
- 410 1912. WHYMPER, SAMUEL LEIGH; Oxford Mansions, Oxford Street, W. 1.; and Oriental Club, Hanover Square, W. 1.
1914. WICKHAM, PERCY FREDERIC; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.
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1. EMBERNAGRA LONGICAUDA.
2. EMBERNAGRA GOSSEI.

THE IBIS.

TENTH SERIES.

VOL. VI. No. 1. JANUARY 1918.

I.—*Notes on Embernagra platensis and its Allies, with the Description of a new Species.* By CHARLES CHUBB, F.Z.S., M.B.O.U.

(Plate I.)

THE earliest recorded reference to this bird is that by Montbeillard in 1778, on which Latham based his description of the Plata Bunting in 1783; this was followed in 1789 by that of Gmelin, who latinised Latham's description under the title of *Emberiza platensis*.

Lesson in 1831 founded the genus *Embernagra* for two birds in the Paris Museum, one name, *Tanagra fabialatu*, being given without any description, the other described under the title of *Tanagra dumetorum* with the following description:—"Vert olivâtre en dessus, gris-brun sur la face et tout le dessous du corp. Du Bresil."

Bonaparte, having examined the specimens, placed *E. dumetorum* as a synonym of *E. platensis*, and introduced a new species, *E. viridis*, with which he synonymised the Lessonian *nomen nudum*.

In 1850 Cabanis introduced *Limnospiza* as a new genus to replace *Embernagra* for the sake of purism.

G. R. Gray in 1841 described a bird from Maldonado in Lower Uruguay under the name of *Emberizoides poliocephalus*; this has been regarded by most authors as a

synonym of *E. p. platensis*; but after a careful comparison I have come to the conclusion that it differs sufficiently from that species to be allowed the status of a subspecific form.

I have, however, suggested a further division by the separation of the Paraguay and Rio Parana birds, the details of which are given below. With this the broad striped group ends, and is followed by an intermediate or narrow striped form, which is represented by two species, viz.: *Tanagra dumetorum* Lesson, 1831, and *Embernagra longicauda* Strickland, 1844.

The remaining group is the uniform or unstriped one, and consists of *E. olivascens* d'Orbigny, which was described in 1836, to which I propose to add *E. gossei*, n. sp.

These notes are based on material that has hitherto been regarded by authors as consisting of two species only, divided by the striped or uniform upper surface. The former, or striped bird, was known as *Embernagra platensis* (Gmelin), and the latter, or uniform bird, as *Embernagra olivascens* d'Orbigny. All other details relating to either appear to have been ignored and, consequently, many facts are obscure, as further research has proved: the most obvious one being that *E. longicauda* of Strickland has for many years been placed as a synonym of *E. olivascens* d'Orbigny, whilst it is a perfectly distinct species and must now be re-established and remain as such.

I have to thank the authorities of the University Museum of Zoology at Cambridge for sending the bird, that Strickland described, to the British Museum for comparison; also Mr. Tom Iredale, for his valuable help in regard to the literature.

Key to the Species.

A. Back broadly lined with black.

a. Upper surface yellowish green; buff
on under surface extended over the
abdomen.

a'. Abdomen and flanks uniform buff. *E. platensis platensis*, p. 3.

b'. Abdomen whitish in contrast to
the dark colour on the flanks .. *E. platensis poliocephala*,

[p. 4.

- b. Upper surface darker green; buff on under surface much restricted; centre of abdomen white *E. platensis paraguayensis*, [p. 5.]
- B. Back narrowly lined with black.
- c. Throat grey; no supraloral streak .. *E. dumetorum*, p. 6.
- d. Throat pale fawn-colour; a pale supraloral streak *E. longicauda*, p. 7.
- C. Back uniform, not lined with black.
- e. Upper surface olive-green; throat and breast silvery-grey; abdomen white; under tail-coverts isabel-line-buff *E. olivascens*, p. 8.
- f. Upper surface olive-grey; throat, breast, and abdomen slate-grey, the last tinged with ochreous-buff; under tail-coverts ochreous-buff .. *E. gossei*, p. 9.

Embernagra platensis platensis.

L'Emberise à cinq couleurs Montb. Hist. Nat. Ois. iv. 1778, p. 364.

Plata Bunting Lath. Gen. Syn. ii. pt. 1, 1783, p. 210: Buenos Ayres—River Plata. Founded on Montbeillard.

Emberiza platensis Gmel. Syst. Nat. i. 1789, p. 886: Buenos Ayres—ad fluvium Plata. Based on Latham.

Tanagra fabialatu Less. Traité d'Orn, 1831, p. 465: Mus. de Paris; de la Plata—nomen nudum, cf. Bonap. Consp. Av. i. p. 483.

Embernagra viridis Bonap. Consp. Av. i. 1850, p. 483: La Plata; Burmeister, J. f. O. 1860, p. 256: La Plata.

Limnospiza platensis Cab. Mus. Hein. i. 1850, p. 136.

Embernagra platensis Sharpe, Cat. B. Brit. Mus. xii. 1888, p. 758, part; Sci. & Huds. Argent. Orn. i. 1888, p. 62; C. H. B. Grant, Ibis, 1911, p. 100: part, specimens a-j.

Adult male. Upper surface green, streaked with black on the head and more broadly on the back; sides of rump buff; short feathers round the eye blackish; throat slate-grey; breast very pale grey washed with buff, the buff becoming deeper in colour on the abdomen and under tail-coverts. "Iris brown; legs and feet light horn-colour" (*F. Withington*).

Total length 197 mm., exposed culmen 15, wing 86, tail 84, tarsus 28, middle toe with claw 26, hind toe with claw 20.

Adult female. Similar to the adult male, but smaller. Wing 80 mm., tail 77.

The specimens from which the descriptions are taken were collected by F. Withington near Buenos Aires in May 1886.

Female juv. Head and hind neck black, the feathers fringed with cream-white, the fringes becoming dull green on the back; lesser upper wing-coverts grass-green; bastard-wing, greater upper wing-coverts, and innermost secondaries blackish with cream-white edgings; outer webs of quills green; rump and upper tail-coverts ochreous, with black centres to the long ones; tail-feathers dull olive-green, edged with white at the tips; sides of face pale brown; throat and hinder cheeks white slightly tinged with sulphur-yellow; upper breast dull white, broadly marked with black, which fades off on the middle of the lower breast; sides of breast, flanks, abdomen, thighs, and under tail-coverts buff.

The specimen on which this description is based was collected by C. H. B. Grant at Ajo, Prov. of Buenos Aires, on December 21, 1908, and presented to the British Museum by Mr. E. Gibson.

Habitat. Eastern Argentina.

Embernagra platensis poliocephala.

Emberizoides poliocephalus Gray, Voy. 'Beagle,' iii. Birds, 1841, p. 98: Monte Video and Maldonado.

Embernagra platensis Sharpe, Cat. B. Brit. Mus. xii. 1888, p. 758: part, specimens *c*, *d*; Aplin, Ibis, 1894, p. 170.

Having examined four birds from Uruguay, including those that Gray mentions in his descriptions of this form, viz., Monte Video and Maldonado, I notice that the Maldonado differs from that of the Argentine bird in the somewhat darker grey on the face and throat, the white on

the middle of the abdomen, and the much darker flanks and under tail-coverts; the dark shaft-lines on the head are almost obsolete, and the measurements are larger.

Total length 198 mm., exposed culmen 14, wing 94, tail 90, tarsus 30, middle toe with claw 25, hind toe with claw 20.

This form can very well be separated subspecifically under the above title.

The Monte Video bird is much paler on the under surface, the grey on the sides of the face also paler.

The female, of the two birds which were collected by Mr. O. V. Aplin at Santa Elena, Soriano, on the 14th of March, 1893, is quite a different-looking bird from *E. platensis*, being more yellowish green on the upper surface; the black shaft-lines on the top of the head, so conspicuous in the Argentine bird, are scarcely discernible, and the shaft-streaks on the back very much narrower and inconspicuous. The under surface is almost entirely buff with only a tinge of grey on the throat, the buff becoming darker on the flanks.

Total length 208 mm., culmen 14, wing (imperfect) fourth primary 90, tail 93, tarsus 28, middle toe with claw 26, hind toe with claw 20.

The male, which was collected on November 3, 1892, is similar to the type from Maldonado, but inclining to grey on the thighs and somewhat paler on the under tail-coverts. "Bill orange, culmen dark horn-colour" (*O. V. Aplin*).

Total length 201 mm., culmen 14, wing 94, tail 88, tarsus 30, middle toe with claw 29, hind toe with claw 21.

Habitat. Southern Uruguay.

***Embernagra platensis paraguayensis*, n. subsp.**

Habia de Canado Azara, Apunt. i. 1802, p. 363, no. xc.

Embernagra platensis Sharpe, Cat. B. Brit. Mus. xii. 1888, p. 758: part, specimen *h*; Chubb, Ibis, 1910, p. 641: Paraguay; C. H. B. Grant, Ibis, 1911, p. 100: part, specimens *k-q*.

In the large series before me I notice that the birds from

Paraguay and the Rio Parana district are darker green, less buff on the under surface, and larger in measurements than those from Prov. of Buenos Aires.

Male. "Bill black above, orange-red below; feet and legs pinkish horn-colour; iris brown" (*W. Foster*). Total length 212 mm., exposed culmen 18, wing 91, tail 92, tarsus 34, middle toe with claw 28, hind toe with claw 22. *Female*. Wing 89 mm.

There is also a difference between the young from the two localities cited above—a young female, collected by *W. Foster* at Sapucay, Paraguay, in November, compared with the one described under *E. p. platensis*, which is about the same age, is not so heavily marked with black on the breast; under surface, for the most part, yellow with scarcely any buff. The edgings to the feathers on the upper surface are for the greater part fawn-colour like the rump and upper tail-coverts.

I have, therefore, decided to regard this form as distinct under the above title.

Habitat. Paraguay, Rio Parana, and north-eastern Argentina.

There are two specimens which have been in the British Museum since 1858. They belong to the Argentine group with broad stripes on the back and are said to have come from Chile, but as there has been no record of any others having been obtained since that date, it would appear that there may have been some mistake in the locality.

Embernagra dumetorum.

Tanagra dumetorum Less. Traité d'Orn. 1831, p. 465: Mus. de Paris. Du Bresil. "Vert olivâtre en dessus, gris-brun sur la face et tout le dessous du corp."

Embernagra platensis Sharpe, Cat. B. Brit. Mus. xii. 1888, p. 758: part, specimen *l*.

Adult. This bird very closely resembles *E. longicauda* on the upper surface, with the dark shaft-lines to the feathers rather more pronounced. It differs, however, in the absence of the fawn-coloured circle of feathers round the eye and

of the supraloral streak, and in having the throat slate-grey instead of fawn-colour. The ear-coverts are rust-brown, the breast is rather paler, and the abdomen is cream-white but lacks the pinkish isabelline wash; under tail-coverts, under wing-coverts, under surface of flight-quills, and lower aspect of tail similar to *E. longicauda*.

Total length 207 mm., exposed culmen 15, wing 94, tail 92, tarsus 30, middle toe with claw 27, hind toe with claw 20.

This bird may, or may not, be the true *E. dumetorum* of Lesson, which name was introduced for a bird from Brazil, but it differs from the other members of this group, and, as it is said to come from Brazil, it may as well bear Lesson's name until time and circumstances may afford us further information.

Habitat. Brazil.

Embernagra longicauda. (Plate I. fig. 1.)

Embernagra longicauda Strickl. Ann. & Mag. Nat. Hist. xiii. 1844, p. 420 : South America.

Limnospiza longicauda Cab. Mus. Hein. i. 1850, p. 136.

Embernagra olivascens Sharpe (nec d'Orb.), Cat. B. Brit. Mus. xii. 1888, p. 759.

Adult. Head, back, and scapulars dull green with minute, almost obsolete, dark shaft-lines to the feathers; brighter and more yellowish green on the wings and tail; inner webs of flight-quills dark brown, the tail-feathers showing traces of obsolete cross-bars; a supraloral streak and the short feathers round the eye, as well as the throat, pale fawn-colour; lores blackish; cheeks, ear-coverts, sides of neck, and sides of breast dusky greyish brown, like the sides of the body; abdomen white tinged with pinkish isabelline, becoming buff on the lower flanks and under tail-coverts; under wing-coverts yellowish, more or less tinged with whitish; under surface of quills brown with buff inner edges; lower aspect of tail yellowish green.

The following characters separate this bird from all its congeners: the pale fawn-coloured supraloral streak and

throat, and the long tail compared with the short wing, which accounts for its name.

Total length 220 mm., exposed culmen 17, wing 77, tail 93, tarsus 27, middle toe with claw 23, hind toe with claw, 17.

Habitat. Unknown.

The type of this species is in the Strickland collection at the University Museum of Zoology, Cambridge.

***Embernagra olivascens.**

Embernagra olivascens d'Orbigny, Voy. Amér. Mérid. iii. Oiseaux, 1836, p. 285 : Bolivia; Sharpe, Cat. B. Brit. Mus. xii. 1888, p. 759.

Limnospiza olivascens Cab. Mus. Hein. i. 1850, p. 136.

Adult. Hind neck, back, scapulars, and upper tail-coverts olive-green with a hoary-grey tinge; brighter and more yellowish green on the wings; inner webs of flight-quills dark brown with paler edges, innermost secondaries margined with ochreous; sides of the lower back buff; middle tail-feathers brown fringed with yellowish green which increases in extent on the outer feathers; crown of the head rather darker than the back; fore part of the head and sides of the face grey; throat and breast also grey but paler and more silvery grey; abdomen cream-white; lower flanks and under tail-coverts pale isabelline-buff; thighs very pale grey; under wing-coverts yellow; under surface of quills pale brown, the inner edges isabelline; lower aspect of tail yellowish.

Total length 199 mm., exposed culmen 17, wing 98, tail 99, tarsus 35, middle toe with claw 26, hind toe with claw 20.

The above description is taken from an example collected at Tilotilo, Prov. Yungas, Bolivia, by the late Clarence Buckley, which appears to have just newly moulted and agrees fairly well with d'Orbigny's description. There are

* It is to be regretted that by some inadvertence this species was not included in Brabourne & Chubb's 'List of the Birds of South America.' Its number should have been 3897.

four other specimens in the British Museum from Bolivia, collected by P. O. Simons, one of which is almost identically the same as the bird described above. The other three are in very worn plumage.

Habitat. Bolivia and western Argentina.

***Embernagra gossei*, n. sp. (Plate I. fig. 2.)**

Adult. Head, mantle, back, and scapulars olive-grey; rump and sides of the rump ochreous-buff; upper wing-coverts and outer webs of primary quills yellowish green, becoming ochreous on the outer edges of the inner secondaries; inner webs of flight-quills hair-brown, rather paler on the inner edges; tail yellowish green, darker on the middle of the central feathers and on the inner webs of some of the lateral ones, with obsolete cross-bars to the feathers; lores and feathers round the eye blackish; fore part of head, sides of face, throat, breast, abdomen, and thighs slate-grey, with a tinge of ochreous-buff on the abdomen, which is more pronounced on the under tail-coverts and extends on to the lower flanks; under wing-coverts yellowish green; under surface of flight-quills pale brown with paler inner edges; lower aspect of tail yellowish green, becoming grey on the apical portion.

Total length 215 mm., exposed culmen 16, wing 94, tail 99, tarsus 31, middle toe with claw 26, hind toe with claw 21.

Habitat. Lujan, Mendoza, Argentina.

This bird is allied to *E. olivascens* d'Orbigny, but differs in having the upper parts olive-grey instead of olive-green, and the under surface slate-grey tinged with ochreous-buff on the abdomen and under tail-coverts, instead of pale ash-grey on the throat and breast, white on the abdomen, and isabelline-buff on the vent and under tail-coverts.

The type, which is in the British Museum, was collected by Capt. Philip Gosse, R.A.M.C., who accompanied Mr. E. A. Fitzgerald on his expedition to the "Highest Andes," and in whose honour the species is named.

There are six other specimens in the British Museum

from Mendoza, which I have no doubt belong to this species, but they are in such worn and abraded condition that it is quite impossible to be certain. Five of them were collected by Herr Weishaupt in February 1871 and were catalogued by Dr. Sharpe as *E. olivascens*, Cat. B. Brit. Mus. xii. p. 759—specimens *b-g*.

II.—*Index-List of the Coloured Plates of Birds in 'The Ibis,' 1859 to 1917.* By Dr. E. HOPKINSON, D.S.O., M.A., M.B., M.B.O.U.

[NOTE.—The following is a list of the coloured plates of birds only, and does not include any others (eggs, anatomy, etc.), maps, or photographs.]

THE order followed is that of the British Museum in Sharpe's Hand-list of Birds, five volumes, published 1899, 1900, 1901, 1903, and 1909 respectively.

The figures after the names of the genera refer to the volume and page of the Hand-list; those preceding the specific names are the species-numbers of these volumes. Species (and on occasion genera) without these numbers are those described since the issue of the Hand-list and therefore not included therein. These can thus be distinguished at a glance by this absence of any numerical prefix, and are followed as well by the original describer's name. Where a second name, having any reference to the plate, appears in the Hand-list, it also appears here (in brackets) below the principal name.

Where the name used on or in the description of the plate differs from the Hand-list name, this difference, to facilitate reference, is shown by the inclusion of the original 'Ibis' name in inverted commas after the plate-reference.

Casuariidæ.

Casuarus (i. 3).

8. uniappendiculatus. 1860, 402, Pl. xiv.

claudii (*Ogilvie-Grant*, 1911). New Guinea Supplement, 1915, 325, Pl. viii. ♂.

Tetraonidæ.

Lagopus (i. 18).

- 5.
- rupestris*
- . 1885, 378, Pl. ix. ♂ in autumn plumage.

Tetrao (i. 19).

- urogallus
- lugens*
- (
- Lonnb.*
- 1905). 1906, 317, Pl. xvi.

Tetrastes (i. 21).

- 3.
- griseiventris*
- . 1884, 430, Pl. xi. "Tetrao
- griseiventris*
- ."

Phasianidæ.

Francolinus (i. 23).

- 17.
- lorti*
- . 1898, 425, Pl. x.

- 22.
- castaneicollis*
- . 1890, 350, Pl. xi.

- 24.
- crawshayi*
- . 1896, 482, Pl. xii.

- 32.
- griseostriatus*
- . 1890, 349, Pl. x.

- 35.
- gedgei*
- . 1892, 551, Pl. xiv.

- harwoodi (
- Blund. & Lovat*
-). 1900, 335, Pl. vi.

- hildebrandti
- altumi*
- (
- Finsch & Rehw.*
-). 1915, 16, Pl. ii. ♀.

- tetraoninus (
- Blund. & Lovat*
-). 1900, 336, Pl. v.

- 48.
- jacksoni*
- . 1892, 51, Pl. i.

Arboricola (i. 29).

- 4.
- ardens*
- . 1893, 436, Pl. xii.

- 8.
- gingica*
- . 1892, 395, Pl. ix.

- 13.
- hyperythra*
- .

- (erythrophrys
- Sharpe*
-). 1890, 139, Pl. iv. "Bambusicola erythrophrys."

- campbelli (
- Robinson*
-). 1905, 165, Pl. iv.

Hæmatortyx (i. 30).

- 1.
- sanguinceps*
- . 1894, 377, Pl. x.

Ithagenes (i. 33).

- | | |
|---|-----------------------|
| 1. <i>cruentus</i> | } 1915, 122, Pl. iii. |
| tibetanus (<i>Stuart Baker</i> , 1914).... | |
| kuseri (<i>Beebe</i> , 1912) | |

(heads).

Lophophorus (i. 33).

- 4.
- chambanus*
- . 1884, 421, Pl. x.

Crossoptilum (i. 35).

- 5.
- harmani*
- . 1881, 399, Pl. xiii.

Pucrasia (i. 36).

- joretiana (
- Courtois*
- , 1912). 1913, 14, Pl. iii.

Phasianus (i. 37).

- 6.
- zerafshanicus*
- . 1910, 472, Pl. viii.

Calophasis (i. 38).

mikado (*O.-Grant*, 1906). 1908, 606, Pl. xiii. ♂ ♀.

Polyplectrum (i. 39).

1. chinquis. 1883, 136, Pl. v. "P. helenæ (*Oates*)."

Turnicidæ.

Turnix (i. 48).

15. saturata. 1882, 428, Pl. xii.

17. ocellata. 1889, 469, Pl. xiv.

Pteroclididæ.

Syrrhaptes (i. 50).

1. paradoxus. 1860, 105, Pl. iv.

Treronidæ.

Sphenocercus (i. 51).

seimundi (*Robinson*, 1910). 1910, 672, Pl. x. ♂ ♀.

Leucotreron (i. 55).

15. leclancheri. 1862, 342, Pl. xii. "L. gironieri."

Ptilopus (i. 56).

6. richardsi. 1882, 139, Pl. v. "P. rhodostictus."

13. porphyraceus. 1891, 579, Pl. xi. "P. clementinæ."

Zonophaps (i. 65).

3. mindorensis. 1896, 476, Pl. xi.

Columbidæ.

Columba (i. 68).

53. palumboides. 1873, 315, Pl. xiii. "Ianthœnas palumboides."

59. griseigularis. 1872, 104, Pl. vi. "Ianthœnas griseigularis."

Chalcopelia (i. 83).

chalcospilos (*Wagl.*). 1912, 34, Pl. i.

1. afra. 1912, 34, Pl. i.

Haplopelia (i. 85).

4. johnstoni. 1893, 28, Pl. iii.

Geotrygon (i. 87).

8. veraguensis. 1874, 328, Pl. xii.

Phlogœnas (i. 88).

keayi (*Eagle Clarke*). 1900, 359, Pl. viii.

7. tristigma. 1865, 393, Pl. ix. "P. tristigmata."

Otidiphaps (i. 90).

2. cervicalis. 1880, 364, Pl. xi. "O. regalis."

Rallidæ.

Hypotœnidia (i. 95).

14. sulcirostris. 1880, 311, Pl. vi.

Ocydromus (i. 98).

1. australis.

2. earli.

"Gallirallus townsoni." 1914, 295, Pl. xi. (? an albinism of one of the above).

Aphanapteryx (i. 98).

1. broecki (extinct). 1869, 306, Pl. viii.

Porzana (i. 101).

10. spiloptera. 1877, 194, Pl. iii.

Rallicula (i. 103).

klossi (*O.-Grant*, 1913). New Guinea Suppl. 1915, 290, Pl. vii. ♂ ♀.

Ortygops (i. 104).

2. exquisita. 1875, 135, Pl. iii. "Porzana exquisita."

4. ayresi. 1877, 352, Pl. vii. "Coturnicops ayresi."

Amaurornis (i. 106).

2. akool. 1892, 495. Pl. xii. "Gallinula coccineipes."

Notornis (i. 109).

5. albus (extinct). 1873, 295, Pl. x.

Podicipedidæ.

Podiceps (i. 113).

15. taczanowskii. 1894, 109, Pl. iv.

Colymbidæ.

Colymbus (i. 115).

5. adamsi. 1894, 273, Pl. viii.

Spheniscidæ.

Pygoscelis (i. 118).

3. antarctica. 1906, 145, Pl. iv. (young).

Puffinidæ.

Œstrelata (i. 125).

12. *brevipes*. 1891, 413, Pl. ix. "*Œ. torquata*."

Pagodroma (i. 127).

1. *nivea*. 1906, 145, Pl. iii. (young).

Diomedeidæ.

Thalassogeron (i. 129).

5. *eximius*. 1914, 504, Pl. xix. (head).

Alcidæ.

Fratercula (i. 133).

2. *glacialis*. 1865, 199, Pl. vi.

Laridæ.

Pagophila (i. 143).

1. *eburnea*. 1888, 440, Pl. xiii. (nestling & egg). "*Larus eburneus*."

Chionididæ.

Chionis (i. 145).

1. *alba*. 1906, 145, Pl. iii. (young).

Charadriidæ.

Hæmatopus (i. 147).

- niger meade-waldoi* (*Bannerman*). 1914, 71, Pl. vi.

Euhyas (i. 151).

1. *leucura*. 1865, 459, Pl. x. "*Chætusia leucura*."

Ochthodromus (i. 152).

4. *geoffroyi*. 1870, 378, Pl. xi. "*Ægialitis geoffroyi*."
7. *asiaticus*. 1870, 202, Pl. v. "*Eudromias asiaticus*."
8. *veredus*. 1870, 209, Pl. vi. "*Eudromias veredus*."

Oxyechus (i. 154).

4. *forbesi*. 1883, 56, Pl. xiv. "*Ægialitis forbesi*."

Ægialitis (i. 154).

15. *pecuaria*. 1873, 262, Pl. viii. "*Æ. varius*."
16. *sanctæ-helenæ*. 1873, 266, Pl. ix.

Thinornis (i. 155).

1. *novæ-zealandiæ*. 1893, 528, Pl. xv. (young).

Anarhynchus (i. 156).

1. *frontalis*. 1869, 306, Pl. viii.

Recurvirostra (i. 157).

4. *andina*. 1874, 242, Pl. ix.

Macrorhamphus (i. 159).

2. *taczanowskii*. 1909, 420, Pl. vii. ♂ ♀. "Pseudo-scolopax taczanowskii."

Pseudoglottis (i. 161).

1. *guttifer*. 1883, 135, Pl. iv. "Totanus haughtoni."

Eurynorhynchus (i. 163).

1. *pygmaeus*. 1869, 432, Pl. xii. ♂ in breeding plumage.

Heteropygia (i. 163).

1. *maculata*. 1907, 57, Pl. xii. (young).
2. *acuminata*. 1893, 183, Pl. v.

Gallinago (i. 165).

22. *pusilla*. 1893, 529, Pl. xv. (young).

Cursoriidæ.

Rhinoptilus (i. 170).

4. *cinctus*. 1863, 31, Pl. i. "Hemerodromus cinctus."

Glareolidæ.

Glareola (i. 170).

2. *melanoptera*. 1868, 254, Pl. viii. "G. nordmanni."

Otididæ.

Neotis (i. 174).

5. *heuglini*. 1859, 344, Pl. xi. "Otis heuglini."

Lissotis (i. 175).

- lovati* (*O.-Grant*). 1902, 453, Pl. xi.

Psophiidæ.

Psophia (i. 181).

6. *obscura*. 1898, 520, Pl. xi.

Ibididæ.

Ibis (i. 184).

1. *æthiopica*. 1878, 450, Pl. xii. (young and egg).

Thaumatibis (i. 185).

1. *gigantea*. 1911, 17, Pl. i.

Theristicus (i. 186).

- branickii* (*Berlep. & Stolz.*). 1900, 515, Pl. ix.

Ciconiidæ.

Dissoura (i. 190).

2. stormi. 1903, 145, Pl. v. "D. mortoni."

Ardeidæ.

Hemigarzetta.

eulophotis (*Swinhoe*). 1914, 541, Pl. xxi.

= Demiegretta sacra (Hand-list, i. 198, part).

Mathews, B. Austr. iii. 1914, p. 448.

Butorides (i. 199).

crawfordi (*Nicoll*). 1906, 696, Pl. xxi.

Erythrocnus (i. 201).

1. rufiventris. 1871, 265, Pl. ix. "Ardea rufiventris."

Nannocnus (i. 203).

1. eurythmus. 1873, 74, Pl. ii. "Ardea eurythma."

Phœnicopteridæ.

Phœnicopterus (i. 205).

2. roseus. 1884, 89, Pl. iv. "Flamingos on nest."

Anatidæ.

Anser (i. 211).

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|---------------------|-----------------------------|
| 3. neglectus. | } 1897, 8, Pl. ii. (bills). |
| 7. fabalis. | |
| "A. segetum." | |

Merganser (i. 229).

4. squamatus. 1900, 602, Pl. xii. ♂ ♀.

Plotidæ.

Plotus (i. 236).

1. rufus. 1886, 43, Pl. iii. ♂. "P. levaillanti."

Sulidæ.

Sula (i. 236).

4. cyanops. 1859, 340, Pl. x. "S. melanops."

Pelecanidæ.

Pelecanus (i. 238).

8. thagus. 1914, 403, Pl. xiii. (heads).

Falconidæ.

Ibycter (i. 244).

6. carunculatus. 1861, 22, Pl. i. "Milvago carunculatus."

Circus (i. 245).

- 4. *spilonotus*. 1863, 198, Pl. v. ♂ ♀.
- 5. *maillardi*. 1863, 163, Pl. iv. ♂ ♀.
- 9. *melanoleucus*. 1874, 266, Pl. x. (young).

Urotriorchis (i. 247).

- 1. *macrurus*. 1870, 52, Pl. iii. "Astur macrurus."

Astur (i. 248).

- 24. *griseiceps*. 1864, 184, Pl. v.
- 36. *franciscæ*. 1864, 292, Pl. vii. "Accipiter francesi (*Smith*)."
"Astur francesi (*Smith*), Sh. B. Afr. i. 152."
- 38. *poliocephalus*. 1860, 322, Pl. x. "Accipiter poliocephalus."
- 40. *haplochrous*. 1859, 275, Pl. viii. "Accipiter haplochrous."
- 43. *albigularis*. 1881, 259, Pl. viii. (immature). "Urospizias albigularis."
- 46. *jardinii*. 1887, 96, Pl. iii. "Urospizias jardinei."
- 50. *pectoralis*. 1861, 313, Pl. x. "Accipiter pectoralis."

Accipiter (i. 252).

- 5. *granti*. 1890, 439, Pl. xiv.
- 16. *ovampensis*. 1875, 367, Pl. vi.
- 19. *collaris*. 1860, 148, Pl. vi.
- 33. *virgatus*. 1863, 447, Pl. xi. "A. *stevensoni*."
- 37. *rufotibialis*. 1889, 68, Pl. ii.

Buteo (i. 255).

- 5. *hyospodius*. 1876, 76, Pl. iii.
- 18. *brachypterus*. 1862, 265, Pl. viii.
- 20. *solitarius*.

Onychotes gruberi (*Ridgw.*). 1881, 396, Pl. xii.

Leucopternis (i. 258).

- 2. *plumbea*. 1872, 239, Pl. viii.

Morphnus (i. 259).

- 2. *tæniatus*. 1879, 237, Pl. vii.

Aquila (i. 260).

- 12. *rapax*. 1865, 166, Pl. v. "A. *nævioides*."

Eutolmaëtus (i. 262).

- 2. *spilogaster*. 1862, 149, Pl. iv. "Spizaëtus ayresi."

Lophotriorchis (i. 262).

1. *kieneri*. 1868, 1, Pl. i. "*Spizaetus nanus* (Wallace)
'near *kieneri*.'

Dryotriorchis (i. 264).

1. *spectabilis*. 1878, 88, Pl. ii.

Circaetus (i. 265).

1. *gallicus*. 1860, 410, Pl. xv. "*C. zonurus*."
4. *beaudouini*. 1862, 208, Pl. vii.
5. *fasciolatus*. 1862, 25, Pl. iii.

Pithecophaga (i. 265).

1. *jefferyi*. 1897, 214, Pl. v.; 1910, 285, 758, Pl. iv.

Baza (i. 271).

11. *leucopais*. 1890, 43, Pl. ii.

Microhierax (i. 272).

3. *latifrons*. 1879, 237, Pl. vii.

Poliohierax (i. 273).

1. *semitorquatus*. 1861, 346, Pl. xii. "*Hypotriorchis castanonotus*."

Spiziapteryx (i. 273).

1. *circumcinctus*. 1862, 23, Pl. ii. "*Falco circumcinctus*."

Falco (i. 273).

3. *peregrinator*. 1882, 293, Pl. x. "*F. atriceps*."
6. *punicus*. 1887, 276, Pl. viii.
10. *babylonicus*. 1861, 217, Pl. vii.
35. *eleonoræ*. 1869, 445, Pl. xvi. "*Hypotriorchis eleonoræ*."
37. *richardsoni*. 1896, 226, Pl. vi.

Cerchneis (i. 276).

13. *alopex*. 1861, 69, Pl. iii. "*Tinnunculus alopex*."
14. *newtoni*. 1863, 34, Pl. ii.

Erythropus (i. 278).

2. *amurensis*. 1868, 40, Pl. ii. ♂ ♀ & young.

Dissodectes (i. 278).

2. *dickinsoni*. 1864, 301, Pl. viii. "*Falco dickinsoni*."

Bubonidæ.*Scotopelia* (i. 281).

1. *pele*. 1859, 445, Pl. xv.
4. *ussheri*. 1871, 414, Pl. xii.

Bubo (i. 282).14. *milesi*. 1886, 163, Pl. vi.23. *blakistoni*. 1884, 183, Pl. vi.*Huhua* (i. 283).5. *poensis*. 1869, 194, Pl. iv.*Scops* (i. 284).45. *brookei*. 1893, 417, Pl. xi.*holerythra*. 1904, 105, Pl. ii. "*Pisorhina holerythra*
(*Sharpe*)."*Heteroscops* (i. 290).1. *luciae*. 1889, 77, Pl. iii.*Gymnoscops* (i. 290).1. *insularis*. 1880, 458, Pl. xiv.*Ninox* (i. 290).3. *affinis*. 1874, 129, Pl. v.25. *obscurus*. 1874, 129, Pl. iv.39. *rudolfi*. 1882, 233, Pl. vi.*Syrnium* (i. 293).4. *biddulphi*. 1881, 423, Pl. xiv.18. *whiteheadi*. 1888, 196, Pl. iii.*bartelsi* (*Finsch*). 1906, 401, Pl. xvii. .*Athene* (i. 296).*chiaradriæ* (*Finsch*). 1903, 1, Pl. i.*Gymnasio* (i. 297).1. *nudipes*. 1859, 64, Pl. i. "*Gymnoglaux nudipes*."*Glaucidium* (i. 297).5. *gnoma*. 1875, 38, Pl. i.10. *griseiceps*. } 1875, 41, Pl. ii.11. *pumilum*. }15. *jardinii*. 1876, 14, Pl. i.*albiventer* (*Alex.*). 1902, 371, Pl. ix.**Strigidæ.***Strix* (i. 300).21. *aurantia*. 1882, 132, Pl. ii. "*S. aurantiaca*."**Loriidæ.***Calliptilus* (ii. 4).1. *solitarius*. 1912, 293, Pl. v. ♂ ♀.

Vinia (ii. 4).

stepheni (*North*). 1913, 346, Pl. ix. "Vini stepheni."

Coriphilus (ii. 4).

cyaneus (*Finsch*). 1907, 379, Pl. viii.

Hypocharmosyna (ii. 6).

9. pygmæa. 1873, 31, Pl. i. "Trichoglossus pygmæus."

Charmosynopsis (ii. 7).

2. margaritæ. 1879, 442, Pl. xii. "Charmosyna margaritæ."

multistriata (*Roths.* 1911). New Guinea Suppl. 1915, 231, Pl. v. ♀.

Oreopsittacus (ii. 7).

arfaki major (*O.-Grant*). New Guinea Suppl. 1915, Pl. v.

Cyclopsittacidæ.

Neopsittacus (ii. 8).

musschenbroeki alpinus (*O.-Grant*, 1914). New Guinea Suppl. 1915, 236, Pl. vi. ♂.

Cyclopsittacus (ii. 8).

godmani (*O.-Grant*). New Guinea Suppl. 1915, 237, Pl. vi. ♂.

Psittacidæ.

Conurus (ii. 14).

12. finschi. 1871, 91, Pl. iv.

Leptopsittaca (ii. 16).

1. branickii. 1894, 402, Pl. xi.

Pyrrhura (ii. 17).

9. egregius. 1881, 130, Pl. iv. "Conurus egregius."

16. hypoxantha. 1900, 671, Pl. xiv.

Bolborhynchus (ii. 18).

6. panychlorus. 1883, 211, Pl. ix. "Brotogerys panychlorus."

Brotogerys (ii. 19).

8. gustavi. 1889, 181, Pl. viii. ("Rostro pallide corneo" in text, but violet on plate.)

Amazona (ii. 20).

14. ochroptera. 1893, 328, Pl. ix. "Chrysotis ochroptera."

15. rothschildi. 1893, 328, Pl. ix. "Chrysotis rothschildi."

Pionopsittacus (ii. 23).

5. *hæmatotis*. 1860, 405, Pl. xiii. "*Pionus hæmatotis*."

Eclectus (ii. 27).

3. *roratus*. 1890, 26, Pl. i. (young).

Palæornis (ii. 31).

5. *wardi*. 1876, 282, Pl. vi. ♂ ♀.
14. *exsul*. 1875, 342, Pl. vii. ♀.

Prioniturus (ii. 29).

4. *verticalis*. 1894, 248, Pl. vi. ♂ ♀.

Psittacella (ii. 34).

4. *pecta*. 1897, 58, Pl. iii. ♂ ♀.

Agapornis (ii. 35).

5. *lilianæ*. 1894, 466, Pl. xii.

Loriculus (ii. 35).

5. *chrysonotus*. 1872, 324, Pl. xi.
13. *bonapartei*. 1891, 50, Pl. iii.

Barnardius (ii. 38).

- macgillivrayi*. 1902, 610, Pl. xv. "*Platycercus* (*Barnardius*) *macgillivrayi* (*North*)."

Podargidæ.*Ægotheles* (ii. 44).

2. *insignis*. }
8. *affinis*. } 1896, 375, Pl. vi.
13. *savesi*. 1881, 132, Pl. v.

Coraciidæ.*Coracopitta* (ii. 46).

1. *pittoides*. 1862, 265, Pl. ix. "*Atelornis pittoides*."

Alcedinidæ.*Corythornis* (ii. 51).

- thomensis* (*Salvad.*). 1902, 565, Pl. xiii. (adult & young).

Aleyone (ii. 52).

6. *websteri*. 1899, 278, Pl. iii.
7. *richardsi*. 1882, 134, Pl. iv.

Ceyx (ii. 52).

15. *cyanipectus*. 1884, 332, Pl. ix.
20. *gentiana*. 1879, 438, Pl. xi.

Haleyon (ii. 56).

28. farquhari. 1900, 339, Pl. vii.

50. trisrami. 1880, 459, Pl. xv.

Bucerotidæ.

Ptilolæmus (ii. 67).

1. tickelli. 1864, 173, Pl. iii. "Tockus tickelli."

Irrisoridæ.

Irrisor (ii. 70).

damarensis (*O.-Grant*). } 1902, 434, Pl. x.
somalienis (*O.-Grant*). }

Scoptelus (ii. 71).

brunneiceps (*Sharpe*). 1904, 610, Pl. xii. (adult & young).

Meropidæ.

Melittophagus (ii. 72).

variegatus bangweolensis (*C. Grant*). 1915, 297, Pl. iv.

6. oreobates. 1902, 620, Pl. xvi.

Todidæ.

Todus (ii. 78).

2. subulatus. 1874, 351, Pl. xiii.

4. pulcherrimus. 1874, 353, Pl. xiii.

Caprimulgidæ.

Eurostopus (ii. 80).

3. nigripennis. 1882, 134, Pl. iii. "Caprimulgus nobilis."

Cosmetornis (ii. 82).

1. vexillarius. 1864, 114, Pl. ii.

Caprimulgus (ii. 84).

19. fulviventris. 1912, 249, Pl. iv. fig. 2.

accræ (*Shelley*). 1912, 247, Pl. iv. fig. 1.

batesi (*Sharpe*). 1909, 25, Pl. i.

27. eximius. 1892, 279, Pl. vi.

31. nubicus. 1866, 72, Pl. ii. "C. tamaricis."

37. stellatus. 1900, 311, Pl. iv.

Cypselidæ.

Cypseloides (ii. 93).

2. brunneitorques. 1860, 28, Pl. iii. "*Chætura rutila*."

Tachornis (ii. 94).

4. infumatus. 1871, 355, Pl. x. "*Cypselus infumatus*."

Aeronautes (ii. 94).

1. melanoleucus. 1887, 151, Pl. v. "*Micropus melanoleucus*."

Trochilidæ.

Campylopterus (ii. 101).

7. phainopeplus. 1880, 171, Pl. iv.

Chlorestes (ii. 111).

2. hypocyanus.

(pyropygia, *S. & G.*). 1881, 596, Pl. xvi. "*Eucephala pyropygia*."

Oxypogon (ii. 133).

3. cyanolæmus. 1880, 172, Pl. iv.

Rhamphomicron (ii. 134).

2. dorsale. 1880, 172, Pl. v.

Trogonidæ.

Pyrotrogon (ii. 150).

6. whiteheadi. 1888, 395, Pl. xii. "*Harpactes whiteheadi*."

Musophagidæ.

Turacus (ii. 152).

12. ruspolii. 1913, 1, Pl. i.

Gallirex (ii. 153).

johnstoni (*Sharpe*). 1902, 112, Pl. v.

Gymnoschizorhis (ii. 154).

2. leopoldi. 1881, 117, Pl. ii. "*Schizorhis leopoldi*."

Cuculidæ.

Cacomantis (ii. 159).

13. passerinus. 1872, 14, Pl. i. "*Polyphasia passerina*"
on plate; "*P. nigra*" in text.

Eudynamis (ii. 164).

3. orientalis. 1869, 343, Pl. x. "*E. ransomi*."

Centropus (ii. 166).

40. andamanensis. 1873, 305, Pl. xi. "Centrocoecyx andamanensis."

Geocoecyx (ii. 174).

1. mexicanus. 1885, 286, Pl. vii. (head). "G. californianus."

Indicatoridæ.

Indicator (ii. 176).

- willcocksii (*Alex.*). 1902, 364, Pl. viii.

Prodotiscus (ii. 177).

- peasi (*O.-Grant*). 1901, 667, Pl. xiii.

Capitonidæ.

Erythrobucco (ii. 178).

1. rolleti. 1861, 121, Pl. v. "Pogonorhynchus rolleti."

Lybius (ii. 178).

5. macleodii. 1899, 377, Pl. vi. "Melanobucco macleodii."

6. leucocephalus. 1861, 121, Pl. v. "Pogonorhynchus leucocephalus."

- tsanæ (*O.-Grant*). 1904, 273, Pl. vi.

Tricholæma (ii. 179).

5. blandi. 1898, 415, Pl. ix.

11. diadematum. 1861, 121, Pl. v. "Pogonorhynchus diadematum."

Smilorhis (ii. 180).

3. whytei. 1893, 11, Pl. i.

4. sowerbyi. 1898, 572, Pl. xii.

Barbatula (ii. 181).

9. xanthoschista. 1900, 308, Pl. iii.

14. jacksoni. 1902, 635, Pl. xvi.

Stactolæma (ii. 182).

2. olivaceum. 1880, 334, Pl. vii. "Barbatula olivacea."

3. woodwardi. 1897, 404, Pl. x.

Cyanops (ii. 184).

8. pulcherrima. 1888, 393, Pl. xi. "Megalæma pulcherrima."

12. nuchalis. 1870, 97, Pl. iv. "Megalæma nuchalis."

13. faber. 1870, 96, Pl. iv. "Megalæma faber."

Mesobucco (ii. 185).

2. eximius. 1892, 324, 441, Pl. xi.

Trachyphonus (ii. 186).

- emini (*Reichw.*). 1915, 449, Pl. v. ♂ ♀.

5. shelleyi. 1886, 105, Pl. v.

6. margaritatus. 1861, 121, Pl. v. "Trachyphonus squamiceps (*Heugl.*) may be the same as 'margaritatus.'"

Capito (ii. 187).

2. maculicoronatus. 1862, 1, Pl. i. ♂ ♀.

4. squamatus. 1876, 494, Pl. xiv.

Semnornis (ii. 188).

1. rhamphastinus. 1861, 184, Pl. vi. "Tetragonops rhamphastinus."

2. frantzii. 1864, 371, Pl. xi. "Tetragonops frantzii."

Picidæ.

Campothera (ii. 205).

14. capricorni. 1869, 323, Pl. ix.

Dendrocopus (ii. 213).

46. atratus. 1876, 343, Pl. ix. "Picus atratus."

Dendropicus (ii. 218).

11. gabonensis. 1883, 444, Pl. xii.

13. lugubris. 1883, 445, Pl. xiii.

Sapheopipo (ii. 223).

1. noguchii. 1887, 178, Pl. vii. "Picus noguchii."

Celeus (ii. 226).

3. kerri. 1892, 136, Pl. iii.

Chrysocolaptes (ii. 227).

9. xanthocephalus. 1872, 99, Pl. iv.

Thriponax (ii. 231).

9. hargitti. 1884, 317, Pl. viii.

11. richardsoni.

(*kalinowskii Tacz.*). 1892, 242, Pl. v.

Picumnus (ii. 233).

37. chinensis. 1881, 228, Pl. vii. "Vivia chinensis."

Iynx (ii. 236).

3. pulchricollis. 1884, 28, Pl. iii.

Eurylæmidæ.

Calypdomena (iii. 1).

2. *hosei*. 1892, 438, Pl. x.

4. *whiteheadi*. 1888, 231, Pl. v.

Pteroptochidæ.

Rhinocrypta (iii. 7).

2. *fusca*. 1874, 198, Pl. viii. ("fulva" on plate.)

Formicariidæ.

Thamnophilus (iii. 10).

35. *simplex*. 1873, 387, Pl. xv.

Terenura (iii. 27).

4. *humeralis*. } 1881, 270, Pl. xi.
5. *spodioptila*. }

Rhamphocænus (iii. 27).

7. *collaris*. 1883, 96, Pl. iii. "*Microbates collaris*."

Grallaria (iii. 40).

14. *ruficeps*. 1877, 444, Pl. viii.

17. *flavotincta*. 1877, 445, Pl. ix.

Dendrocolaptidæ.

Aphrastura (iii. 51).

2. *masafueræ*. 1871, 180, Pl. vii. "*Oxyurus masafueræ*."

Synallaxis (iii. 53).

23. *whitii*. 1881, 599, Pl. xvii.

Xenerpestes (iii. 62).

1. *minlosi*. 1886, 54, Pl. iv.

Berlepschia (iii. 63).

1. *rikeri*. 1889, 351, Pl. xi.

Thripophaga (iii. 64).

4. *sclateri*. 1883, 490, Pl. xiii.

Picolaptes (iii. 83).

18. *layardi*. 1873, 386, Pl. xiv.

Tyrannidæ.

Mecocerculus (iii. 94).

5. *calopterus*. 1875, 383, Pl. ix. "*Serpophaga leucura*."

Cnipolegus (iii. 96).

9. *orenocensis*. 1884, 455, Pl. xiii.

11. *cinereus*. 1880, 357, Pl. xi.

Anæretes (iii. 112).

3. fernandezianus. 1871, 179, Pl. vii.

Myiopagis (iii. 116).

1. placens. 1859, 122, Pl. iv. fig. 2. "Elainia placens."

Ornithion (iii. 119).

6. imberbe. 1859, 444, Pl. xiv. "Camptostoma imberbe."

Tyranniscus (iii. 121).

4. vilissimus. 1859, 122, Pl. iv. "Elainea vilissima."

Hirundinea (iii. 130).

1. ferruginea.

3. bellicosa.

- rupestris (*Max.*).

} 1869, 196, Pl. v.

Mitrephanes (iii. 136).

1. phæocercus. 1859, 442, Pl. xiv. "Mitrephorus phæocercus."

Pipridæ.

Pipra (iii. 153).

16. suavissima. 1882, 79, Pl. i. ♂ ♀.

23. opalizans. 1898, 60, Pl. ii.

- exquisita (*Hellmayr*). 1906, 35, Pl. i.

Machæropterus (iii. 156).

4. deliciosus. 1862, 175, Pl. vi.

Cotingidæ.

Platypsaris (iii. 163).

6. aglaia. 1859, 394, Pl. xiii. "P. affinis."

Pachyrhamphus (iii. 164).

2. griseigularis. 1885, 302, Pl. viii.

Lathria (iii. 166).

5. streptophora. 1884, 448, Pl. xvi.

Pipreola (iii. 172).

6. frontalis. 1878, 169, Pl. vi.

13. whitelyi. 1887, 502, Pl. xiii. ♂ ♀.

Carpodectes (iii. 174).

2. antonia. 1884, 27, Pl. ii.

Cephalopterus (iii. 177).

2. penduliger. 1859, 114, Pl. iii.

Gymnoderus (iii. 177).

1. fœtidus. 1901, 714, Pl. xiv. (head of adult).

Chasmorhynchus (iii. 178).

4. tricarunculatus. 1865, 90, Pl. iii.

Pittidæ.

Pitta (iii. 179).

5. megarhyncha. 1870, 414, Pl. xii. "Brachyurus megarhynchus."

reichenowi (*Mad.*). }
longipennis (*Reichw.*). } 1903, 91, Pl. iv.

8. nympha. 1870, 415, Pl. xiii. "Brachyurus oreas."

49. cucullata. 1870, 415, Pl. xiii. "Brachyurus bankana."

Xenicidæ.

Xenicus (iii. 186).

1. longipes. 1905, 592, Pl. xii. (adult ♂).

2. gilviventris. 1905, 592, Pl. xii. (adult ♂ & juv.).

"X. stokesi (*Gray*)=*gilviventris*" (*Scl.*).

Traversia (iii. 186).

1. lyalli. 1895, 237, Pl. vii. "Xenicus insularis."

Hirundinidæ.

Chelidonaria (iii. 187).

4. dasytus. 1874, 151, Pl. vii. fig. 1. "Chelidon blakistoni."

5. lagopus. 1874, 152, Pl. vii. fig. 2. "Chelidon whitelyi."

Hirundo (iii. 192).

38. monteiri. 1862, 340, Pl. xi.

Petrochelidon (iii. 200).

8. spilodera. 1868, 135, Pl. iv. "Hirundo alfredi."

Muscicapidæ.

Hemichelidon (iii. 204).

5. ferruginea.

(*cinereiceps*, *Sharpe*). 1889, 194, Pl. vii.

Stizorhina (iii. 209).

1. fraseri. }
2. finschi. } 1870, 52, Pl. ii.

Cyornis (iii. 214).2. *vivida*. 1866, 393, Pl. xi.33. *erythaca*. 1888, 199, Pl. iv. "*Siphia erithacus*."*Chasiempis* (iii. 232).1. *sandwicensis*. 1885, 18, Pl. i. ♂ ♀.*Hylota* (iii. 237).2. *australis*. 1882, 258, Pl. viii.4. *nehrkorni*. 1892, 373, Pl. viii.*Diaphorophya* (iii. 245).3. *blissetti*. 1873, 173, Pl. iv.

chlorophrys (<i>Alexander</i>).	} 1907, 449, Pl. x.
ansorgei (<i>Hartert</i>).	

Platystira (iii. 246).3. *peltata*. 1873, 160, Pl. iv.5. *jacksoni*. 1892, 301, Pl. vii.*Pseudobias* (iii. 246).1. *wardi*. 1870, 498, Pl. xv.*Smithornis* (iii. 247).*sharpei* (*Alexander*). 1903, 384, Pl. vii.*Trochocercus* (iii. 251).*megalolophus* (*Swynn.*). 1908, 96, Pl. ii. ♂ ♀.4. *albonotatus*. 1892, 303, Pl. vii.*vivax* (*Neave*). 1910, 130, Pl. i. ♂ ♀.*Terpsiphone* (iii. 263).26. *corvina*. 1867, 335, Pl. iv. "*Tchitrea corvina*."*Rhinomyias* (iii. 266).8. *gularis*. 1889, 201, Pl. vii.10. *insignis*. 1895, 446, Pl. xii.*goodfellowi* (*O.-Grant*). 1906, 482, Pl. xviii.*Cryptolopha* (iii. 272).2. *ricketti*. 1897, 174, Pl. iv.13. *ruficapilla*. 1862, 149, Pl. v. "*Pindalus ruficapillus*."15. *mackenziana*. 1901, 91, Pl. iii.24. *montis*. 1889, 203, Pl. viii.*Abornis* (iii. 275).4. *nigrorum*. 1891, 47, Pl. ii. "*Cryptolopha nigrorum*."5. *olivacea*. 1891, 47, Pl. ii.6. *schwaneri*. 1889, 203, Pl. viii. "*Cryptolopha schwaneri*."

Stoparola (iii. 285).

10. nigrimentalis. 1894, 507, Pl. xiv.

Pseudocalyptomena.

graueri (*Roths.*). 1909, 690, Pl. x.

Campophagidæ.

Chlamydochera (iii. 297).

1. jefferyi. 1887, 439, Pl. xiii.

Lobotus (iii. 298).

oriolinus (*Bates*). 1911, 535, Pl. viii.

Pericrocotus (iii. 299).

johnstoniæ (*O.-Grant*). 1906, 480, Pl. xix. ♂ ♀.

Lalage (iii. 302).

17. rufiventer. 1866, 278, Pl. vii. ♂ ♀ et juv. "Oxynotus typicus."

18. newtoni. 1866, 278, Pl. viii. ♂ ♀. "Oxynotus newtoni."

Pycnonotidæ.

Ægithina (iii. 306).

1. viridissima. 1877, 304, Pl. v.

Chloropsis (iii. 307).

11. kinabaluensis. 1899, 272, Pl. ix. ♂ ♀.

Irena (iii. 308).

2. ellæ. 1891, 313, Pl. viii. ♂ ♀.

Hypsipetes (iii. 309).

4. perniger. 1870, 251, Pl. ix.

Hemixus (iii. 311).

6. castanonotus. 1870, 250, Pl. ix.

Cerasophila (iii. 312).

1. thompsoni. 1903, 592, Pl. xii.

Criniger (iii. 316).

8. gularis. 1871, 169, Pl. vi.

Alophoixus (iii. 319).

1. phæocephalus. 1871, 169, Pl. vi. "Criniger phæocephalus."

Trichophoropsis (iii. 319).

1. typicus. 1872, 377, Pl. xii. "Setornis criniger."

Bleda (iii. 320).

9. milanjensis. 1894, 9, Pl. i. "*Xenocichla milanjensis*."

12. fusciceps. 1894, 10, Pl. i. "*Xenocichla fusciceps*."

Phyllostrophus (iii. 326).

8. cerviniventris. 1894, 10, Pl. ii.

Molpastes (iii. 328).

6. intermedius. 1909, 304, Pl. v.

magrathi (*Whitehead*). 1909, 302, Pl. v.

Pycnonotus (iii. 329).

13. taivanus. 1894, 337, Pl. ix.

Otocompsa (iii. 333).

4. leucotis. 1909, 304, Pl. v. "*Molpastes leucotis*."

Oreoctistes (iii. 334).

1. leucops. 1888, 388, Pl. ix.

Timeliidæ.

Trochalopteron (iv. 6).

22. ripponi. 1901, 529, Pl. xi.

Ianthocincla (iv. 10).

7. cinereiceps. 1887, 167, Pl. vi. "*Trochalopteron cinereiceps*."

Argya (iv. 11).

16. aylmeri. 1885, 404, Pl. xi.

Pomatorhinus (iv. 13).

3. schisticeps. 1878, 132, Pl. iii.

9. ochraceiceps. 1877, 465, Pl. xiii.

15. ferruginosus. 1878, 134, Pl. iv. fig. 1.

16. phayrei. 1878, 135, Pl. iv. fig. 2.

17. albigularis. 1878, 135, Pl. v. fig. 1.

18. stenorhynchus. 1878, 135, Pl. v. fig. 2.

19. musicus. 1863, 250, Pl. vi.

Allocotops (iv. 19).

1. calvus. 1889, 413, Pl. xiii.

Crateropus (iv. 22).

kordofanicus (*Butler*). 1905, 330, Pl. vii.

Androphilus (iv. 28).

1. accentor. 1888, 390, Pl. ix.

Pseudotharrhaleus (iv. 29).

1. caudatus. 1895, 448, Pl. xiii.

Pellorneum (iv. 29).

4. subochraceum. 1877, 452, Pl. x.

Turdinus (iv. 32).

1. abbotti. 1877, 452, Pl. xi. "Trichostoma abbotti."
 4. celebensis. 1876, 378, Pl. xi. "Trichostoma celebense."
 5. finschi. 1876, 378, Pl. xi. "Trichostoma finschi."
 27. batesi. 1902, 94, Pl. iv.

Amaurocichla (iv. 36).

- kempi (*Sharpe*). 1905, 231, Pl. v.

Drymocataphus (iv. 36).

7. tickelli. 1877, 452, Pl. xi.

Aethostoma (iv. 38).

1. rostratum. 1877, 308, Pl. vi. fig. 2. "Brachypteryx
 buxtoni."

Ptilocichla (iv. 40).

2. basilanica. 1891, 312, Pl. vii.

Proparus (iv. 45).

5. fucatus. 1899, 295, Pl. iv.

Schœnoparus (iv. 46).

6. variegatus. 1899, 299, Pl. iv.

Zosterornis (iv. 51).

1. striata. 1895, 110, Pl. iv.
 2. whiteheadi. 1894, 510, Pl. xv.
 3. pygmæa. 1897, 232, Pl. vi.
 7. dennistouni. 1896, 118, Pl. iii.

Brachypteryx (iv. 55).

5. erythrogyna. 1888, 389, Pl. x.
 6. poliogyna. 1895, 446, Pl. xii.

Heteroxenicus (iv. 56).

3. saturata. 1883, 251, Pl. x. "Brachypteryx saturata."

Lioptila (iv. 59).

6. auricularis. 1866, 109, Pl. iv.

Actinodura (iv. 60).

2. ramsayi. 1877, 464, Pl. xii.
 morrisoniana (*O.-Grant*). 1908, 604, Pl. xii. ♂.

Ixulus (iv. 63).

3. humilis. 1894, 481, Pl. xiii. fig. 2.
 4. clarki. 1894, 481, Pl. xiii. fig. 1.

Herpornis (iv. 64).

2. *tyrannulus*. 1870, 347, Pl. x. "Herphoris" on plate.

Liocichla (iv. 64).

1. *steerei*. 1877, 474, Pl. xiv.

Paradoxornis (iv. 68).

3. *heudei*. 1914, 181, Pls. viii. & ix. (uncoloured).

Suthora (iv. 69).

6. *craddocki*. 1903, 586, Pl. xi.

8. *davidiana*. 1897, 172, Pl. iv.

9. *thompsoni*. 1903, 56, Pl. xi.

15. *bulomachus*. 1866, 300, Pl. ix.

- morrisoniana* (*O.-Grant*). 1908, 604, Pl. xii. ♂.

Troglodytidae.

Cistothorus (iv. 86).

11. *brunneiceps*. 1881, 129, Pl. iii.

Anorthura (iv. 91).

2. *hirtensis*. 1885, 80, Pl. iii. "Troglodytes *hirtensis*."

Elachura (iv. 92).

1. *formosa*.

(*punctata* *Blyth*). 1892, 62, Pl. ii.

2. *haplonota*. 1892, 62, Pl. ii.

Microcerculus (iv. 97).

13. *tæniatus*. 1881, 130, Pl. iii.

15. *ustulatus*. 1883, 204, Pl. ix.

Orthnocichla (iv. 98).

2. *whiteheadi*. 1889, 410, Pl. xii.

Cinclidæ.

Cinclus (iv. 100).

15. *ardesiacus*. 1867, 109, Pl. vi.

Turdidæ.

Entomedestes (iv. 114).

2. *coracinus*. 1901, 311, Pl. viii. "*Myiadestes coracinus*."

Merula (iv. 117).

12. *leucops*. 1878, 57, Pl. i. "*Turdus brunneus* *Lawr.*"

(= ♀, teste B. M. Cat.)

22. *ludoviciæ*. 1896, 78, Pl. ii.

23. *pritzbueri*. 1879, 187, Pl. v. "*Turdus pritzbueri*."

34. euryzona. 1861, 277, Pl. viii. "Turdus fulviventris."
 37. protomelana. 1872, 136, Pl. vii. "Turdus dissimilis."
 (Geocichla dissimilis in text.)
 83. javanica. 1875, 346, Pl. viii. "Turdus javanicus."
 88. albiceps. 1866, 135, Pl. v. "Turdus albiceps."

Geocichla (iv. 130).

- batesi. 1908, 123, Pl. iii.
 6. gurneyi. 1864, 346, Pl. ix. "Turdus gurneyi."

Turdus (iv. 138).

7. naumanni. 1862, 319, Pl. x.
 10. hortulorum. 1874, 444, Pl. xiv. "Turdus chrysopleurus."

Hylocichla (iv. 141).

- Redwing $\times$ Fieldfare hybrid. 1898, 317, Pl. vii.

Tharrhaleus (iv. 146).

5. koslowi.
 (pallidus *Menzb.*). 1887, 299, Pl. ix.
 7. fulvenscens. 1882, 281, Pl. viii.
 fagani (*O.-Grant*). 1917, 162, Pl. iv. "Accentor fagani."

Hydrocichla (iv. 149).

3. frontalis. 1872, 259, Pl. ix. "Henicurus frontalis."

Chimarrhornis (iv. 150).

2. bicolor. 1894, 509, Pl. xv.

Diplootocus (iv. 152).

1. moussieri. 1860, 364, Pl. xi. "Ruticilla moussieri."

Erithacus (iv. 154).

- swynnertoni (*Shelley*). 1907, 61, Pl. i.

Ianthia (iv. 156).

- johnstoniæ (*O.-Grant*). 1907, 175, Pl. iv. ♂ ♀. "In the plate the under tail-coverts of the female should be white" (*O.-G. Ibis*, 1912, 649).
 goodfellowi (*O.-Grant*). 1912, 649, Pl. xiv. ♂ ♀.

Larvivora (iv. 157).

- ruficeps (*Hartert*). 1907, 621, Pl. xiii.

Callene (iv. 158).

8. cynorthopsis. 1902, 95, Pl. iv. fig. 1.

Copsychus (v. 159).

2. seychellarum. 1865, 332, Pl. viii.

Cittocincla (iv. 161).

10. *albiventris*. 1873, 307, Pl. xii. "*Kittacincla albiventris*."

Cossypha (iv. 162).

12. *bartteloti*. 1890, 159, Pl. v.

19. *modesta*. 1897, 539, Pl. xii. "*Bessonornis modesta*."

Irania (iv. 165).

1. *gutturalis*. 1867, 73, Pl. i. "*Bessornis albigularis*."

Pratincola (iv. 171).

- dacotiæ murielæ* (*Bannerman*). 1914, 75, Pl. v. "*Saxicola dacotiæ murielæ*."

Cercomela (iv. 174).

2. *melanura*. 1896, 24, Pl. i. "*Myrmecocichla melanura*."

3. *asthenia*.

- (*yerburyi Sharpe*). 1896, 24, Pl. i. "*Myrmecocichla yerburyi*."

Saxicola (iv. 175).

24. *seebohmi*. 1882, 563, Pl. xiv.

25. *phillipsi*. 1885, 404, Pl. xii.

37. *cumingi*. 1902, 59, Pl. iii.

38. *mæsta*. 1859, 299, Pl. ix. ♂ ♀. "*S. philothamna*."

Zeledonia (iv. 183).

1. *coronata*. 1905, 24, Pl. i.

*Sylviidæ.**Locustella* (iv. 185).

4. *ochotensis*. 1876, 332, Pl. viii. "*Arundinax blakistoni*."

6. *certhiola*. 1876, 41, Pl. ii. "*Calamodyta doriæ*."

Acrocephalus (iv. 187).

8. *stentoreus*. 1864, 97, Pl. i.

22. *mendanæ*. 1883, 43, Pl. i.

23. *pistor*. 1883, 44, Pl. ii.

27. *vaughani*. 1904, 55, Pl. i. "*Tatare vaughani*."

Orthotomus (iv. 192).

1. *frontalis*. 1877, 112, Pl. ii.

3. *cinereicæps*. 1877, 112, Pl. ii.

8. *chloronotus*. 1896, 117, Pl. iii.

10. *cineraceus*. 1876, 41, Pl. ii. "*O. borneoensis*."

13. *erythropterus*. 1869, 93, Pl. i. "*Cisticola iodoptera*."

Cisticola (iv. 194).

11. *cinerascens*. 1869, 97, Pl. ii. "*Drymœca concolor*."
18. *nigriloris*. 1897, 536, Pl. xii.
21. *rufa*. 1870, 476, Pl. xiv. "*Drymœca brachyptera*."
22. *troglydites*. 1869, 106, Pl. iii. "*Drymœca ferruginea*."
30. *terrestris*. 1863, 330, Pl. vii. fig. 2. "*C. ayresi*."
1869, 106, Pl. iii. (both figures). "*Hemipteryx oligura*" and "*Drymœca eximia*."
31. *aridula*. 1902, 16, Pl. i.
32. *hindei*. 1898, 580, Pl. xii.
38. *marginalis*. 1869, 93, Pl. i. "*Drymœca marginalis*."
1869, 97, Pl. ii. "*D. flaveola*."

Eremiornis (iv. 203).

1. *carteri*. 1902, 608, Pl. xiv.

Cryptillas (iv. 203).

1. *victorini*. 1866, 139, Pl. vi. "*Phlexis layardi*."

Bradypterus (iv. 204).

5. *barratti*. 1876, 202, Pl. iv.

Calamonastes (iv. 206).

1. *simplex*. 1901, 54, Pl. ii.

Sylvia (iv. 209).

22. *nana*. 1859, 340, Pl. x. "*S. delicatula*."

Herbivocula (iv. 212).

1. *schwarzi*. 1899, 1, Pl. i. "*Lusciniola schwarzi*."

Sericornis (iv. 220).

- balstoni* (*O.-Grant*). 1909, 677, Pl. ix.

Apalis (iv. 222).

- ruddi* (*C. Grant*). 1911, 306, Pl. iv. ♂.
- claudoi* (*W. Schl.*). 1911, 305, Pl. iv. ♂.
6. *pulchra*. 1892, 155, Pl. iv.
7. *jacksoni*. 1892, 156, Pl. iv. "*Dryodromas jacksoni*."

Euprinodes (iv. 223).

4. *cinereus*. 1901, 65, Pl. iii.
7. *lopezi*. 1903, 373, Pl. ix. "*Apalis lopezi*."
13. *viridiceps*. 1899, 71, Pl. ii. fig. 1. "*Apalis viridiceps*."

Urolais (iv. 225).

1. *mariae*. 1903, 375, Pl. viii.

Dryodromas (iv. 225).

1. *fulvicapilla*. 1863, 330, Pl. viii. "*Camaroptera natalensis*."
pearsoni (*Neave*). 1910, 150, Pl. ii. ♂ ♀.

Sylviella (iv. 226).

8. *pallida*. } 1900, 75, Pl. i.
 9. *maxima*. }

Eremomela (iv. 228).

23. *nigriceps*. 1902, 320, Pl. vii. ♂ ♀. "*Apalis nigriceps*."

Parmoptila (iv. 233).

1. *woodhousei*. 1909, 67, Pl. ii.
 3. *jamesoni*. 1890, 163, Pl. v. "*Pholidornis jamesoni*."

Stiphronis (iv. 234).

- xanthogaster* (*Sharpe*). 1905, 476, Pl. ix.

Scotocerca (iv. 234).

1. *inquieta*. 1909, 296, Pl. iv.

Urosphena (iv. 238).

1. *squamiceps*. 1877, 205, Pl. iv.

Suya (iv. 238).

5. *superciliaris*.
(albigularis Hume). 1883, 250, Pl. x.

Burnesia (iv. 241).

1. *flaviventris*. 1877, 311, Pl. vi. "*P. rafflesi (Tweedd.)*."

Malurus (iv. 243).

9. *leuconotus*. 1917, 589, Pl. x. "*Hallornis cyonotus*."
bernieri (O.-Grant). 1909, 676, Pl. x. ♂ ♀.

Stipiturus (iv. 245).

- malachurus hartogi (Carter, 1916)*. 1917, 597, Pl. xi.
 ♂ ♀.
 2. *ruficeps*. 1899, 399, Pl. vii. ♂ ♀.

Vireonidæ.*Vireo* (iv. 247).

- lauræ (Nicoll)*. 1904, 563, Pl. xi.

Pachysylvia (iv. 253).

5. *muscapina*. 1881, 299, Pl. x. }
 12. *fuscicapilla*. 1881, 303, Pl. x. } "*Hylophilus*."
 14. *brunneiceps*. 1881, 305, Pl. xi. }
 18. *ferrugineifrons*. 1881, 307, Pl. xi. }

Vireolanius (iv. 256).

2. leucotis. 1878, 445, Pl. xi.

Cyclorhis (iv. 257).

17. altirostris. 1887, 324, Pl. x.

Artamidæ.

Pseudochelidon (iv. 262).

1. eury stomina. 1861, 321, Pl. xi.: misprinted "Psalidoprognae cypselina" on plate.

Prionopidæ.

Hypocolius (iv. 275).

1. ampelinus. 1868, 181, Pl. v.

Laniidæ.

Lanius (iv. 279).

8. mollis. 1882, 374, Pl. xi.

Fiscus (iv. 284).

9. mackinnoni. 1891, 596, Pl. xiii. "Lanius mackinnoni."

Enneoctonus (iv. 285).

3. raddei. 1889, 89, Pl. v. "Lanius raddei."

7. tigrinus. 1866, 211, Pl. vi. ♂ ♀. "Lanius magnirostris."

Otomela (iv. 288).

4. cristata. 1867, 211, Pl. v. "Lanius phœnicurus."

5. isabellina. 1867, 211, Pl. v. "Lanius isabellinus."

Chlorophoneus (iv. 290).

5. manningi. 1899, 369, Pl. v. "Malaconotus manningi."

16. maraisi. 1901, 183, Pl. vi. "Laniarius maraisi."

17. bertrandi. 1894, 15, Pl. ii. "Laniarius bertrandi."

Laniarius (iv. 293).

1. ruficeps. 1885, 402, Pl. x. "Dryoscopus ruficeps."
mufumbiri (*O.-Grant*). 1912, 332, Pl. vi.

Dryoscopus (iv. 296).

2. nandensis. 1901, 41, Pl. ii.

Pomatorhynchus (iv. 299).

13. jamesoni. 1885, 403, Pl. x. "Telephonus jamesoni."

Pachycephala (iv. 303).

27. *littayei*. 1879, 190, Pl. vi.

85. *leucostigma*. New Guinea Suppl. 1915, 95, Pl. iv.
♂ ad., ♂ juv.

Eulacestoma (iv. 314).

1. *nigripectus*. 1904, 373, Pl. ix.

Paridæ.

Periparus (iv. 324).

1. *ledouci*. 1871, 86, Pl. iii. "Parus ledoucii."

5. *atlas*. 1903, 207, Pl. vi. "Parus atlas."

6. *cypriotes*. 1888, 119, Pl. ii. "Parus cypriotes."
 ater ptilosus (*O.-Grant*). 1912, 646, Pl. xiii. fig. 2.
 "Parus ater ptilosus."

8. *britannicus* } 1911, 552, Pl. x. "Parus."
 hibernicus (*O.-Grant*). }

Machlolophus (iv. 327).

4. *holsti*. 1895, 211, Pl. v. "Parus holsti."

Parus (iv. 328).

10. *sarawacensis*.

 (*cinerascens Slater*). 1885, 327, Pl. iv.

Pentheres (iv. 330).

2. *funereus*.

 (*nigricinereus Jackson*). 1899, 638, Pl. xiii. "Parus
 nigricinereus."

20. *thruppi*. 1885, 406, Pl. xi. "Parus thruppi."

Penthornis (iv. 333).

1. *semilarvatus*. 1879, 301, Pl. ix. "Melaniparus semi-
 larvatus."

Cyanistes (iv. 333).

5. *ombriosus*. 1890, 433, Pl. xiii. "Parus ombriosus."

6. *palmensis*. 1889, 512, Pl. xvi. "Parus palmensis."

Ægithalus (iv. 337).

12. *tephronotus*. 1865, 95, Pl. iv. "Orites tephronotus."

Anthoscopus (iv. 340).

1. *minutus*. } 1904, 313, Pl. viii.
2. *smithi*. }

Regulidæ.

Regulus (iv. 343).

goodfellowi (*O.-Grant*). 1907, 167, Pl. iii. ♂ ♀.

Sittidæ.

Sitta (iv. 346).

8. magna. 1897, 3, Pl. i. ♂.

23. krueperi. 1865, 306, Pl. vii.

24. whiteheadi. 1885, 28, Pl. ii. ♂ ♀.

Dendrophila (iv. 350).

7. mesoleuca. 1895, 111, Pl. iv.

Neositta (iv. 351).

magirostris (*Ingram*). 1908, 473, Pl. ix. ♂ ♀.

Daphœnositta (iv. 353).

1. miranda. 1898, 208, Pl. iv.

Certhiidæ.

Rhabdornis (iv. 356).

3. inornata. 1897, 235, Pl. vi.

Zosteropidæ.

Zosterops (v. 1).

14. polioogastra. 1861, 357, Pl. xiii.

15. anjuanensis.

(prætermissa *Tristr.*). 1887, 370, Pl. x i.

43. metcalfei. 1894, 29, Pl. iii.

59. siamensis. 1876, 350, Pl. x.

71. rendovæ. 1894, 30, Pl. iii.

92. minuta. 1879, 186, Pl. iv.

106. kikuyuensis. 1891, 594, Pl. xii.

116. clara. 1890, 287, Pl. viii.

145. inornata. 1879, 186, Pl. iv.

153. hovarum. 1887, 370, Pl. xi.

Chlorocharis (v. 20).

1. emiliæ. 1888, 392, Pl. xi.

Hypocryptadius (v. 21).

1. cinnamomeus. 1906, 473, Pl. xviii.

Woodfordia (v. 632, Addenda).

1. superciliosa. 1916, 121, Pl. iii.

Dicæidæ.

Dicæum (v. 21).

- 18. monticola. 1890, 287, Pl. viii. ♂ ♀.
- 47. hypoleucum. 1894, 252, Pl. vii.
- 49. trigonostigma. 1876, 350, Pl. x. ♀.
- 58. sibutense. 1894, 251, Pl. vii. ♂ ♀.
- formosum (*O.-Grant*). 1912, 652, Pl. xiii. fig. 1.

Prionochilus (v. 30).

- 4. johannæ. 1888, 201, Pl. iv.

Aemonorhynchus (v. 31).

- 1. vincens. 1874, 2, Pl. i. "Prionochilus vincens."

Piprisoma (v. 32).

- 1. squalidum. 1867, 430, Pl. x. "Piprisoma agile."

Pachyglossa (v. 32).

- 1. melanoxantha. 1874, 3, Pl. i. "Prionochilus melanoxanthus."

Nectariniidæ.

Æthopyga (v. 37).

- 25. flavipectus. 1895, 111, Pl. v.

Eudrepanis (v. 40).

- 3. jefferyi. 1895, 111, Pl. v.

Urodrepanis (v. 40).

- 1. christinæ. 1870, 18, Pl. i. "Æthopyga christinæ."
- 2. latouchii. 1891, 43, Pl. i. ♂ ♀. "Æthopyga latouchii."

Leptocoma (v. 41).

- 3. henkei.
(whiteheadi *O.-Grant*). 1894, 514, Pl. xiv. "Cinnyris whiteheadi."
- 6. grayi. 1870, 18, Pl. i. "Nectarophila grayi."

Cinnyris (v. 44).

- 11. shelleyi. 1899, 556, Pl. xi. ♂ ♀.
- 21. osea. 1865, 67, Pl. ii. "Nectarinia osea."
- 46. reichenowi. 1891, 593, Pl. ii.
- 46 b. neergaardi (v. 634, Addenda). 1911, 274, Pl. iii. ♂ ♀.

Cyanomitra (v. 53).

- 17. ursulæ. 1903, 342, Pl. ix.

Arachnothera (v. 58).

14. *juliæ*. 1887, 451, Pl. xiv.

Anthothreptes (v. 60).

5 *a. carruthersi* (v. 636, Addenda). 1908, 285, Pl. v. ♂ ♀.

Meliphagidæ.

Ptilotis (v. 79).

8. *gracilis*. 1898, 56, Pl. i.

salvadorii utakwensis (*O.-Grant*). New Guinea Suppl.

1915, 75, Pl. ii. ♂.

præcipua lorenzi (*van Oort*). New Guinea Suppl, 1915,

75, Pl. iii. ♂.

Ptilopleura (v. 86).

1. *erythropleura*. New Guinea Suppl. 1915, 75, Pl. iii. ♂.

Pycnopygius (v. 96).

1. *stictocephalus*. New Guinea Suppl. 1915, 79, Pl. ii. ♂.

Mniotiltidæ.

Dendroeca (v. 102).

56. *crawfordi*. 1904, 586, Pl. xi.

Catharopeza (v. 111).

1. *bishopi*. 1880, 73, Pl. i.

Granatellus (v. 118).

2. *francescæ*. 1874, 307, Pl. xi. ♂ ♀.

Myioborus (v. 120).

6. *albifrons*. 1878, 318, Pl. viii. "Setophaga albifrons."

7. *flavivertex*. 1887, 130, Pl. iv. "Setophaga flavivertex."

8. *bairdi*. 1878, 317, Pl. viii. "Setophaga bairdi."

10. *rufocoronatus*. 1878, 316, Pl. vii. "Setophaga ruficoronata."

12. *chrysops*. 1878, 314, Pl. vii. "Setophaga chrysops."

Drepanididæ.

Chlorodrepanis (v. 131).

4. *stejnegeri*. 1890, 192, Pl. vi. ♂. "Hemignathus stejnegeri."

Heterorhynchus (v. 135).

1. *hanapepe*. 1890, 192, Pl. vi. ♂. "Hemignathus hanapepe."

Loxioides (v. 136).

1. *bailleui*. 1879, 90, Pl. ii. ("bailleni" in text.)

Telespiza (v. 137).

1. *cantans*. 1890, 341, Pl. ix.

Motacillidæ.*Motacilla* (v. 137).

8. *lugens*. 1878, 345, Pl. ix. "*M. amurensis*."

Xanthocorys (v. 151).

1. *nattereri*. 1878, 366, Pl. x. "*Anthus nattereri*."

Macronyx (v. 153).

5. *sharpei*, 1905, 102, Pl. iii.

Alaudidæ.*Certhilauda* (v. 154).

4. *somalica*. 1905, 512, Pl. x.

Otocorys (v. 157).

4. *atlas*. 1898, 604, Pl. xiii.

35. *berlepschi*. 1892, 523, Pl. xiii.

Pseudalæmon (v. 163).

1. *fremantlei*. 1898, 415, Pl. ix. fig. 2.

Spizocorys (v. 165).

1. *conirostris*. 1874, 103, Pl. iii. "*Alauda conirostris*."

5. *razæ*. 1898, 107, Pl. iii.

Mirafra (v. 170).

7. *degeni*. 1904, 261, Pl. v.

22. *simplex*.

(*marginata Hawker*). 1899, 64, Pl. ii. fig. 2.

27. *africana*. 1863, 322, Pl. ix. "*Megalophonus rostratus*."

Ammomanes (v. 183).

17. *erythrochlamys*. 1874, 103, Pl. iii. "*Megalophonus erythrochlamys*."

Eremopteryx (v. 186).

7. *signata*.

(*harrisoni O.-Grant*). 1901, 286, Pl. vii. "*Pyrrhulauda harrisoni*."

Fringillidæ.

Sporophila (v. 207).

27. *nigrorufa*. 1871, 6, Pl. i. ♂ ♀. "*Spermophila nigrorufa*."

28. *pileata*. 1871, 6, Pl. i. ♂. "*Spermophila pileata*."

46. *ocellata*. 1871, 14, Pl. ii. ♂. "*Spermophila ocellata*."
("♀" in error on plate.)

50. *aurita*. 1871, 14, Pl. ii. ♂. "*Spermophila aurita*."

Dolospingus (v. 215).

1. *nuchalis*. 1871, 402, Pl. xi.

Fringilla (v. 225).

2. *polatzeki*. 1912, 614, Pl. xii. "*F. teydea polatzeki*."

7. *palmae*. 1890, 71, Pl. iii. ♂ ♀.

Rhynchostruthus (v. 241).

2. *louisæ*. 1898, 398, Pl. viii.

Carospiza (v. 245).

1. *brachydactyla*. 1868, 206, Pl. viii. "*Petronia brachydactyla*."

Passer (v. 245).

36. *moabiticus*. 1867, 360, Pl. vii. ♂ ♀.

Poliospiza (v. 254).

12. *whytei*. 1897, 528, Pl. ii. "*Serinus whytei*."

Serinus (v. 257).

21. *syriacus*. 1868, 204, Pl. vii. "*Serinus aurifrons*."

Pseudacanthis.

yemenensis (*O.-Grant*). 1917, 145, Pl. iv.

Sycalis (v. 261).

7. *lutea*. 1872, 46, Pl. ii."

12. *chrysops*. 1872, 45, Pl. ii.

Propasser (v. 266).

2. *rhodochlamys*. 1881, 156, Pl. vi. ♂ ♀. "*P. rhodometopus*."

5. *blythi*. 1882, 283, Pl. ix. ♂ ♀.

10. *waltoni*. 1906, 225, Pl. xiv. ♂ ♀.

Pyrrhula (v. 271).

9. *leucogenys*. 1895, 455, Pl. xiv.

10. *murina*. 1866, 97, Pl. iii.

15. *erithacus*. 1863, 440, Pl. x.

Emberiza (v. 276).

1. *schœniclus*.
(*passerina* *Pall.*). 1879, 39, Pl. i.
3. *pyrrhulina*. 1876, 332, Pl. viii. "*Schœniclus pyrrhulinus*."
8. *yessoensis*. 1879, 39, Pl. i.
25. *citrinella*.
(*brehmi* *Popham*). 1901, 453, Pl. x. "*E. citrinella brehmi*."
26. *erythrogenys*.
(*mollesoni* *Sarudny*). 1901, 453, Pl. x. "*E. citrinella mollesoni*."
33. *semenovi*.
(*citriniventris* *Scl.*). 1906, 313, Pl. xv.
45. *castaneiceps*. 1889, 294, Pl. x. "*E. cioides*."
47. *jankowskii*. 1888, 317, Pl. viii.
51. *siemseni*. 1913, 277, Pl. vi. "*Junco siemseni*."

Incaspiza (v. 299).

- pulehra*. 1886, 259, Pl. viii. "*Hæmophila pulehra*."

Compsospiza (v. 299).

1. *garleppi*. 1893, 208, Pl. vi.

Poospiza (v. 301).

7. *melanoleuca*. 1880, 354, Pl. ix.
11. *erythrophrys*. 1891, 599, Pl. xvii.

Brachyspiza (v. 309).

6. *strigiceps*. 1877, 47, Pl. i. "*Zonotrichia strigiceps*."
8. *canicapilla*. 1877, 47, Pl. i. "*Zonotrichia canicapilla*."

Pseudochloris (v. 325).

6. *aurantiiventris*. 1872, 47, Pl. iii. ♂ ♀. "*Sycalis aurantiiventris*."

Nesospiza (v. 326).

2. *goughensis*. 1905, 255, Pl. vi.
3. *jessiae*. 1905, 257, Pl. vi.

Idiopsar (v. 329).

1. *brachyurus*. 1884, 241, Pl. vii.

Lophospingus (v. 331).

1. *pusillus*. 1880, 354, Pl. ix. "*Coryphospingus pusillus*."

Buarremon (v. 336).

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| 13. melanolæmus. | } 1879, 425, Pl. x. |
| 14. latinucha. | |

Cœrebidæ.

Cœreba (v. 341).

luteola major (*Cab.*). 1912, 508, Pl. viii.

chloropyga majuscula (*Cab.*). 1912, 505, Pl. viii.

Diglossa (v. 345).

6. pectoralis. 1875, 212, Pl. iv.

15. albilateralis. 1875, 216, Pl. v.

Dacnis (v. 349).

13. venusta. 1863, 311, Pl. vii.

Tanagridæ.

Chlorochrysa (v. 361).

4. fulgentissima.

(*hedwigæ Berlep. & Stolz.*). 1901, 716, Pl. xiv. ♂ ♀.

5. nitidissima. 1875, 466, Pl. x.

Calospiza (v. 363).

12. johannæ. 1901, 595, Pl. xii. ♂ ♀. "Calliste johannæ."

43. emiliæ. 1901, 595, Pl. xii. "Calliste emiliæ."

56. cabanisi. 1868, 71, Pl. iii. "Calliste cabanisi."

palmeri (*Hellmayr*). 1910, 331, Pl. v.

57. dowi. 1863, 450, Pl. xii. "Calliste dowi."

70. melanotis. 1876, 409, Pl. xii. "Calliste melanotis."

71. cyanotis. 1876, 409, Pl. xii. "Calliste cyanotis."

80. whitelyi. 1884, 455, Pl. xiii. "Calliste whitelyi."

Iridornis (v. 373).

2. reinhardti. 1865, 495, Pl. xi.

Pœcilothraupis (v. 374).

8. melanogenys. 1880, 120, Pl. iii.

Spindalis (v. 380).

4. pretrei. 1916, 33, Pl. i.

8. benedicti. 1916, 33, Pl. i. "S. exsul."

9. salvini. 1916, 33, Pl. i.

Pyrranga (v. 384).

12. roseigularis. 1873, 126, Pl. iii.

Tachyphonus (v. 392).

2. luctuosus.

(*Lanio lawrencei* *Scl.* = ♂ juv.). 1885, 272, Pl. vi.

9. nattereri. 1885, 273, Pl. vi.

Nesospingus.

speculiferus. 1875, 383, Pl. ix. "Chlorospingus ?
speculiferus."

Ploceidæ.

Drepanoplectes (v. 412).

1. jacksoni. 1891, 246, Pl. v. ♂ ♀.

Pyromelana (v. 414).

14. aurea. 1886, 354, Pl. ix.

Nigrita (v. 419).

4. emiliæ. 1869, 384, Pl. xi.

12. uropygialis. 1869, 384, Pl. xi.

Pseudonigrita (v. 421).

4. cabanisi. 1888, 292, Pl. vi. "Philæterus cabanisi."

Nesocharis (v. 424).

1. shelleyi. 1915, 514, Pl. vii. ♂ ♀.

Paludipasser.

locustella (*Neave*). 1910, 251, Pl. iii.

Hypargus (v. 427).

3. schlegeli. 1870, 482, Pl. xiv. "Pytelia schlegeli."

4. nitidulus. 1910, 681, Pl. xi. ♂ ♀. "Pytelia nitidula."

5. dybowskii. 1915, 514, Pl. vii. ♂ ♀. "Lagonosticta
dybowskii."

Munia (v. 439).

20. hunsteini. 1886, 1, Pl. i. "Donacicola hunsteini."

Erythrura (v. 448).

5. serena. }
6. regia. } 1881, 544, Pl. xv.

Estrilda (v. 450).

27. ochrogaster.

(*margaritæ* *O.-Grant*). 1900, 130, Pl. iii. "Sporægin-
thus margaritæ."

29. atricapilla. 1886, 330, Pl. ix.

Malimbus (v. 460).

- 3. *cassini*. 1876, 461, Pl. xiii.
- 10. *scutatus*. 1887, 41, Pl. ii. "*M. rubroperonatus*."
- 14. *coronatus*. 1908, 352, Pl. vii.

Anaplectes (v. 462).

- 1. *rubriceps*. 1876, 466, Pl. xiii. fig. 2. "*Malimbus rubriceps*."
- 1882, 353, Pl. vii. fig. 2. "*Sharpia ayresi*."
- ("Sharpea" on plate.)
- 2. *gurneyi*. 1887, 17, Pl. i. "*Ploceus gurneyi*."

Notiospiza (v. 463).

- 1. *angolensis*. 1887, 18, Pl. i. "*Ploceus angolensis*."

Phormoplectes (v. 464).

- 1. *insignis*. 1891, 253, Pl. vi. fig. 1 (♀). "*Sycobrotus insignis*."
- 1917, 73, Pl. ii. (head). "*Heterophantes insignis*."
- 4. *auricomis*. 1917, 72, Pl. ii. (head). } "*Hetero-*
- 5. *dorsimaculatus*. 1917, 73, Pl. ii. (head). } *phantes*..."

Othyphantes (v. 465).

- 6a. *batesi* (v. 645, Addenda). 1910, 435, Pl. vi. ♂ ♀.

Heterophantes (v. 466).

- 1. *stephanophorus*. 1891, 253, Pl. vi. fig. 2. ♂.

Sitagra (v. 472).

- 3. *jacksoni*. 1882, 293, Pl. vii. "*Ploceus jacksoni*."
- 6. *capitalis*. 1887, 34, Pl. ii. "*Ploceus capitalis*."
- 16. *bertrandi*. 1893, 23, Pl. ii. "*Hyphantornis bertrandi*."
- 17. *velata*. 1868, 466, Pl. x. "*Hyphantornis mariquensis*."

Ploceus (v. 480).

- 3. *megarhynchus*. 1901, 32, Pl. i. figs. A & B.

Icteridæ.*Ostinops* (v. 485).

- 4. *salmoni*. 1883, 153, Pl. vii.
- 7. *oleaginus*. 1883, 154, Pl. vii.

Agelæus (v. 491).

- 18. *cyanopus*. 1884, 13, Pl. i. ♂ ♀.

Icterus (v. 498).

- 16. *oberi*. 1882, 487, Pl. xiii.
- 32. *grace-annæ*. 1883, 368, Pl. xi.

Megaquiscalus (v. 508).

7. *tenuirostris*. 1884, 157, Pl. v. ♂ ♀. "*Quiscalus tenuirostris*."

Sturnidæ.*Spodiopsar* (v. 515).

8. *andamanensis*. 1873, 313, Pl. xii. "*Sturnia andamanensis*."

Æthiopsar (v. 520).

6. *albocinctus*. 1880, 72, Pl. i. "*Acridotheres albocinctus*."

Basileornis (v. 521).

1. *celebensis*. }
3. *corythaix*. } 1861, 283, Pl. ix.

Cinnyricinclus (v. 525).

3. *sharpei*. 1899, 590, Pl. xii. (ad. et juv.). "*Pholidauges sharpei*."

Galeopsar (v. 534).

1. *salvadorii*. 1891, 241, Pl. iv.

Onychognathus (v. 536).

8. *walleri*. 1880, 335, Pl. viii. "*Amydrus walleri*."

Heteropsar (v. 542).

2. *albicapillus*. 1860, 246, Pl. vii. "*Notauges albicapillus*."

Paramythiidæ.*Paramythia* (v. 545).

1. *montium*. 1893, 244, Pl. vii.

Oriolidæ.*Oriolus* (v. 546).

4. *notatus*. 1870, 218, Pl. vii.
34. *meneliki*. 1900, 122, Pl. ii.
42. *brachyrhynchus*. 1870, 226, Pl. viii., both figures.
43. *nigripennis*. 1870, 228, Pl. vii.
45. *chlorocephalus*. 1896, 183, Pl. iv.
46. *cruentus*. 1881, 33, Pl. i. "*Analcipus cruentus*."
47. *consanguineus*. 1881, 33, Pl. i. ♂ ♀. "*Analcipus consanguineus*."
49. *hosei*. 1893, 393, Pl. x.
50. *ardens*. 1862, 363, Pl. xiii. "*Psarolophus ardens*."

Dicruridæ.

Dicrurus (v. 556).

4. mirabilis. 1872, 103, Pl. v.

Paradiseidæ.

Parephephorus (v. 568).

1. duivenbodei. 1890, 419, Pl. xii. "Craspedophora duivenbodei."

Paradisea (v. 572).

4. decora. 1883, 202, Pl. viii.

9. minor. 1905, 431, Pl. viii. (final stage of the display).

Paradisornis (v. 574).

1. rudolfi. 1886, 252, Pl. vii.

Cicinnurus (v. 575).

1. regius. 1907, 227, Pl. v. (in full display).

Semioptera (v. 578).

1. wallacei. 1860, 26, Pl. ii. ♂ ♀.

Paradigalla (v. 581).

- brevicauda (*Roths. & Hart.*). 1912, 109, Pl. ii.

Ptilonorhynchidæ.

Macgregoria (v. 581).

1. pulchra. 1897, 251, Pl. viii.

Parotia (v. 581).

3. wahnesi. 1911, 356, Pl. vi. ♂ ♀.

4. duivenbodei. 1911, 355, Pl. v.

Loria (v. 583).

1. loriæ. 1895, 344, Pl. viii. ♂ ♀. "Loria mariæ."

Cnemophilus (v. 584).

1. macgregori. 1891, 414, Pl. x.

Xanthomelus (v. 585).

2. ardens. New Guinea Suppl. 1915, 31, Pl. i.

Corvidæ.

Dendrocitta (v. 607).

8. cinerascens. 1879, 250, Pl. viii.

9. bayleyi. 1874, 145, Pl. vi. ("baylei" on plate.)

Cissa (v. 608).

4. jefferyi. 1889, 84, Pl. iv.

Garrulus (v. 611).

14. *brandti*. 1867, 193, Pl. iii.

Cyanolyca (v. 623).

9. *viridicyanea*. 1917, 465, Pl. viii. “*Cyanolyca* v. *viridicyanea*.”

viridicyanea cuzcoensis (*W. L. Schl.* 1917). 1917, 465, Pl. viii.

Picathartes (v. 626).

1. *gymnocephalus*. 1874, 67, Pl. ii. (adult & young).

III.—*Notes on the Nidification of some Indian Falconidæ.*

III. *The Genera Ictinaëtus and Microhierax.* By E. C. STUART BAKER, M.B.O.U.

(Plate II.)

Ictinaëtus malayensis (Reinw.).

The Black Eagle.

UP to the time Oates wrote the second volume of the ‘Catalogue of the Birds’ Eggs in the British Museum’ the only existing account of the nesting of this fine Eagle was that of Hume in ‘Nests and Eggs of Indian Birds,’ and it is not quite certain that the eggs described by him are those of this Eagle.

In the first place, the nests are described as having been built on ledges on the faces of cliffs, whereas all nests taken since have, without exception, been found on trees; again, in one of these supposed Black Eagles’ nests there were three eggs, but no one else has ever found more than two in a nest, and very rarely more than one. The colour of—or want of colour in—the fourth single egg almost certainly shows that it was not that of the Black Eagle, which lays very richly-coloured eggs. Finally, the lining membrane in the eggs described by Hume is paler and more yellow than in any of those since obtained.

Probably the first authentic egg of the Black Eagle is

one which was in the collection of Mr. J. C. Parker, and which was secured by me at his death, together with the skin of the female. This was taken on the 16th of April, 1883, somewhere in Kashmir, but the only note on skin and egg was "*Spilornis rutherfordi* 16/4/83," and an indecipherable word, which looks like Kooloo. On the back of the ticket is "Shot off nest with one egg very hard-set."

The skin and egg are both undoubtedly those of the Black Eagle, and the name inscribed, though in Mr. Parker's own handwriting, is assuredly only a clerical error, as not only was Mr. Parker a good ornithologist, but I had previously corresponded with him about this very egg under its proper name. The nest, he informed me, was built on a fir-tree on a cliff-side.

I found this fine Eagle breeding in the mountain ranges south of the Brahmmapootra, and first took its egg in north Cachar. Previously I had found a nest containing a youngster in down, so the following year I went out to investigate about six weeks earlier, and was lucky enough to find a fresh egg. This was left for four days to see if another would be laid, and then taken.

The nest was a huge affair of sticks lined with green leaves, and was placed high up in a large tree in deep ever-green forest, at an elevation of about 5500 feet. Like all other nests which I have seen, this one was built on a tree standing in a very rugged country, but was not particularly hard to get at owing to the tree being covered with a network of the "elephant creeper" and other plants, which made climbing an easy matter. The tree itself grew on the side of a very narrow ridge, joining two hills together, and forming a narrow bridle-path, some three or four feet wide, which zig-zagged its rocky and difficult way from one Naga village to another. Looking over the edge of this path on one side, one could see through the straggling tree-tops into a depth below of many hundreds of feet, the drop being almost sheer, and the trees seeming to hang on by their roots in the most precarious way between jutting boulders and rocks. On the other side, though not quite so sheer,



1



3



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2



4

MENPES PRESS, WATFORD

Figs. 1-4. *ICTINAËTUS MALAYENSIS*.
Fig. 5. *MICROHIERAX MELANOLEUCUS*.

the cliff fell away very precipitously, yet holding enough soil to encourage a dense growth of oaks and other trees. Fortunately it was on this side of the ridge that the Black Eagles had selected a tree on which to build their nest, and clambering down the rocks I was soon at the foot of the tree, and in another five minutes was up to the nest.

Up to this point in the proceedings the parent birds had taken but little interest beyond wheeling round and round the tree and uttering their shrill, rather melancholy call. As, however, I got to the nest, both birds swooped down time after time to within a few feet of me, and once indeed the female almost struck me in passing. Leaving the egg, I then descended, and before I was half-way down, the female was back again in the nest and crouching over her egg.

Later, when I went to take the egg, the birds were much fiercer, and commenced their attacks directly I began to climb their tree, so that after trying to get up myself, I had to come down, and shoot the female before I could tackle the nest. Both birds swooped at me repeatedly, but the female again and again came within inches of my head, whereas the male never came within two or three feet. A fall at that height would have meant certain death, and it would have been quite impossible to have carried the egg down and also shield oneself, so that the murder of the parent bird was absolutely necessary.

This nest must have been over four feet in diameter and about eighteen inches deep, with a well-made depression in the centre lined with a pad of green leaves and the ends of green branches. The leaves were nearly all those of the "elephant creeper," and were so large that it only took about a dozen to make a thick, cool pad. The branches were just the small ends of oak twigs with the green leaves still adhering.

In the body of the nest the sticks were of considerable size, some of them fully an inch in diameter, and many of them over three feet in length. Most of these appeared to be dead sticks and branches either picked up by the birds off the ground, or torn off dead boughs. The sticks which

lay on the upper part were much smaller and more pliant, and seemed in some cases to have been torn from living trees.

The male secured another partner within a very short time of the death of his wife, and in the subsequent years the pair built a nest on the opposite side of the ridge, where they were quite safe from molestation, for though we could see it well enough, we could not get at it.

A second nest, taken in the adjoining Khasia Hills, was built in a tree growing on the side of the Lailancote-Cherrapoonji cliffs. I was never able to visit this nest in time to take the egg; but in 1913, after I had left India, one of my collectors sent me home an egg which he had taken from it. He refused to again rob the nest on the ground that the birds had attacked and nearly killed him on this occasion, and stipulated for the gift of a gun and ammunition to enable him to shoot or scare the birds away before taking the egg.

Colonel R. H. Rattray, who took this Eagle's egg in Danga Gali, found the parents quite as bold as those which I had robbed. He writes :—

“The only place I ever came across these Eagles breeding was near Danga Gali. During the summer of 1903 I was staying in Murree, and my men then reported to me that they had found an Eagle's nest in the Gali in question. When, however, we went out and examined it, we found that the young one had been hatched out.

“In 1904 I again went up to Danga Gali, arriving there about the 20th of April, and at once put men on to watch the hillside upon which the birds had nested the previous year. On the 3rd of May they found the nest occupied, and reported to me that the bird was sitting. I went out the next day, and found the great stick platform in a tall fir-tree, half-way down a nasty precipice. After a dangerous climb, we succeeded in getting to the ledge, out of which the tree grew, and I sent the men up, who reported one egg, which I directed them to bring down. The birds were most aggressive whilst the man was on the tree, and I had some

difficulty in persuading him to continue his climb up to the nest, and had eventually to fire at and wound one of the birds before they would desist from their attacks.

"This egg was much incubated, but I managed to clean it, and it is the one you now have in your collection.

"I was in Danga Gali in 1905, but failed to find the birds or their nest; Buchanan, however, had taken an egg exactly similar to mine some years previously from the same hill-side, so it is probable that the pair had bred there for many years."

Mr. J. Stewart, who has taken many nests of this Eagle in Travancore, gives the birds the same reputation for bravery in defence of their homes and young, and tells me that it is frequently necessary to frighten the birds off with gunfire before they will allow the native climbers to get up to the nests.

This gentleman has sent me home a mass of interesting notes about this Eagle, from which I have compiled the following information.

Many pairs have two nests, which they use apparently without any definite rule to guide them. Sometimes they occupy the same nest year after year, and then suddenly for no obvious reason leave it, and use the other nest, returning again to the first after a year's absence. Sometimes they will occupy alternate nests in alternate seasons, and, generally, when their eggs or young are taken will leave the robbed nest and lay for the second time in their other home. Even in this, however, one cannot prophesy with any certainty as to their movements, and more than once Mr. Stewart has taken a second egg from the same nest in one and the same season. Another curious thing is that these birds are very irregular in their laying, and frequently it would seem as if they miss a year's laying altogether. After his long residence in the southern part of Travancore, Mr. Stewart says :—

"I think I know practically every pair of birds and their nests within a radius of many miles, and often I have known birds resort to their nests, play about with them, do a few

odd repairs, stay by them all the breeding-season, yet make no attempt to lay."

They start nesting operations very early ; Mr. Stewart has seen them repairing their nests in October and November, and his men have reported them as being back at their nests even earlier than this. At first, however, their interest in them is very casual ; an odd hour or so may be spent in pulling out and in putting in a few sticks, and then some days may elapse before any more work is done. Some two months may be passed in this manner, by which time the body of the nest is repaired to suit their tastes, then after another interval of rest the more important work of lining their nests with green leaves is begun ; this, if the birds are in earnest about laying, only takes two or three days, but even at this advanced stage the birds often delay their laying, and the lining has all to be done over again.

The actual laying season is from the end of November to the second week in January, but most of Mr. Stewart's eggs were taken in the end of December.

After the eggs have been laid the birds continue to put green leaves into the nest, for eggs have been found which have been much incubated, with fresh green leaves under them.

In southern India they appear to make much the same kind of nest, and to place it on much the same kind of tree as they do in northern India, but as a rule the ground on which the tree stands is not broken and precipitous ; whereas, also, in the Himalayas the forest selected is generally more or less evergreen, in southern India it appears often to be deciduous.

Mr. Stewart has taken a nest from a tree so covered with creepers and parasites that in spite of its size it was difficult to detect, and also from trees in which it stood out as a conspicuous object visible from a considerable distance. One nest he described to me as having been built on a tree, the extreme summit of which had been broken off in a storm, and on the splintered end of the trunk reposed the mass of sticks of which the nest was composed.

The eggs are nearly always one only in number, but on three occasions Mr. Stewart has taken two eggs in the same clutch. They vary most extraordinarily in size and shape, and also in character and colour of their markings, but, taken as a whole, are the most handsome eggs of any of the birds-of-prey I know, with the exception perhaps of *Pernis*.

Excluding Hume's eggs, the authenticity of which I doubt, I have now seen 20 eggs of this Eagle, of which no less than 12 were taken by Mr. J. Stewart. The most usual type perhaps is as follows (Plate II. fig. 4):—Ground-colour white to creamy white, primary markings, blotches, spots and specks of rich vandyke-brown, the majority of the blotches of great size, in some cases as much as 25×15 mm., but, of course, broken and irregular in shape. There are also a few smaller marks of a brown, so deep as to appear black. In this type of egg, the secondary markings are few in number and very small, such as there are being of a paler washed-out brown or sienna. There are really no subordinate or sub-shell markings of the usual grey or purple-grey tint.

A somewhat similar type to the above differs in being altogether a paler, more poorly-marked egg. The markings, which are equally large and numerous, and, as in the former type, irregularly distributed over the whole surface of the egg, are more of a dull earth-brown than vandyke-brown, with here and there a faint purplish or grey tint.

In this egg, as in the last described, there are practically no secondary markings.

Two eggs taken by myself in Cachar and a third taken in the Khasia Hills (Plate II. fig. 2) are extraordinarily handsome eggs. The ground-colour is a pale cream with a fair number of primary markings of rich vandyke and blackish brown, some fairly large, but mostly smallish blotches and spots. The secondary markings are extremely numerous over the whole of the egg, especially at the larger end, where they coalesce to form a cap or cloud of lilac and brownish grey upon which the deeper primary

markings stand well out, whilst the larger smudges and smears blend more or less at their edges with the surrounding colour.

Yet a third type of egg is more clouded than definitely blotched or spotted with colour. The primary marks consist of clouds and indefinite blotches of light earth-brown scattered sparsely over the whole surface of the egg, whilst underlying these, but far more numerous, are similar, though somewhat smaller, markings of faint neutral tint and greyish purple (Plate II. fig. 1).

An extraordinary egg given to me by Mr. Stewart (Plate II. fig. 3) was taken with the egg depicted in Plate II. fig. 4, and though both belong to the same clutch they contrast as strongly as any two eggs I have seen.

The whole ground-colour is a dull reddish ochre with a few pale reddish-brown markings scattered here and there over its surface, and with more numerous, but still fainter mottlings and clouds of neutral tint which coalesce and form a cap at the larger extremity. Single eggs very similar to this have been taken by Mr. Stewart.

The above four may be said to form the standard types of this egg, but a few may be obtained which are more or less intermediate, though generally inclining distinctly to one or the other of the four.

Most eggs are in shape very broad ovals, but little compressed towards the smaller end; in some, indeed, the difference between the two ends is almost negligible. In a few eggs the shape is a rather long oval, and in one or two the smaller end is well differentiated from the larger.

The texture is coarse and not very close, but the surface varies considerably; in some it is dull and almost rough to the touch, whilst in others it is comparatively smooth and exhibits a very faint gloss when fresh.

In length the eggs vary between 65·0 and 58·6 mm., and in breadth between 51·2 and 48·4 mm., whilst one abnormally small egg measures only 55·0 × 43·0 mm. This egg is a second one, laid after the first had been robbed.

The breeding-season over the greater part of this bird's range is, as I have already shown, during the months of November, December, and January, but in the higher hills and mountains in the north would appear to be in April and early May, and perhaps the end of March.

In the Khasia Hills a perfectly fresh egg was taken on the 2nd of May, and Rattray's hard-set one was taken on the 4th of the same month.

The Black Eagle is essentially a bird of forest, mountains, and wild country, but where such a combination exists, it is to be found practically all over India, Ceylon, Burma, and Malaya. In India it is not found in the plains except as a straggler in the non-breeding season, nor is it found even on the hills and mountains except within reach of heavy forest.

Colonel Rattray tells me that he saw one bird at Nowshera, and adds:—

“We certainly saw them at Kohat, where I once shot a bird that was annoying us when out shooting. We used to hate the bird at this place, for it was a no uncommon occurrence for one of them to accompany us, soaring high above us overhead, but out of range of the guns. They kept the birds down, and if a snipe got away wounded, they at once followed and picked it up. I know in this way I lost a number of snipe and quail. It was also a nuisance when out hawking, as it kept the houbara down so that they continued running and refused to be put up. I never heard of their nesting anywhere in the vicinity.”

In Cachar, where the bird was, however, rare, we never saw any instances similar to that described by Colonel Rattray, even when we were snipe- or partridge-shooting on ground surrounded on all sides by forest. The various fishing Eagles and an occasional Osprey would regularly retrieve and carry off wounded birds of all descriptions, but we never saw or heard of a Black Eagle doing so. Up in the mountains, however, I once shot a Bamboo Partridge in a glade in deep forest, which was seized and carried off by an Eagle, I believe, of this species.

I have more than once, also, seen them stoop at and strike Jungle-fowl or Kalij Pheasant, either just on the outskirts of forest or actually in the forest itself. One evening I was going through some beautiful oak forest, high up on the Barail Range, when two or three Jungle-fowl ran across the path, from one side to the other, into the thin cover of caladiums and ferns which carpeted the ground. Just as they were disappearing out of sight, there was a rushing swish through the air, and a magnificent Black Eagle came hurtling down, struck the old cock Jungle-fowl fair on the back, bowling it over in a cloud of feathers. As the Eagle struck it rose again with a few flaps of its wings, and then turning in its stride, so to speak, was back instantaneously on to the fowl, which it seized and carried away without any apparent effort to a tree close by. It was most remarkable the manner in which this Eagle stooped through the interlacing boughs of the lofty trees, and again, when it had seized its prey, twisted its way in and out of their trunks whilst moving at great speed. The majority of birds-of-prey require more or less open ground in which to stoop, and the smaller birds when once they have obtained the cover of a tree or bush consider themselves safe. The performance as I have described it cannot, however, be anything unusual for the Black Eagle, as I once saw one eating a hen Jungle-fowl on a tree miles from any big clearance or open space, and have twice on other occasions seen them eating Wood-Partridge well in the heart of extensive forest. Probably they frequent the outskirts of clearances, rivers, and open glades for choice when hunting, but there is no doubt that forest and cover is no deterrent to the Eagle stooping when hungry, and is but little safeguard to the quarry.

They do not, however, restrict themselves to bigger game, and will eat locusts, grasshoppers, lizards, etc., and I have seen them regularly quartering deep and gloomy nullahs in heavy forest, and now and then stooping and seizing small things both in the air and off the ground and bushes, which I was too far away to identify. Their flight under these circumstances is slow, but very easy and pliant, and when

necessary a couple of beats of the wings suffice to increase the speed in a moment.

Its curiously long and straight claws would seem to be ill-adapted for striking heavy quarry, although the tarsi are extremely powerful. So far as I have been able to see, however, the result of the stoop is just as effective as it is when made by Eagles with the usual powerful short hind claw. A partridge which once nearly fell on the top of me, when struck by one of these Eagles, was dead before it fell to the ground, and had its back quite cleanly ripped from about the centre well up into the head, which was nearly torn off by the one and same stroke as that which opened the back.

It has a shrill cry which it sometimes utters when soaring, but it is on the whole a very silent bird, and one may be within the haunts of this bird all day long without hearing its plaintive call. When perching, it sometimes utters a low croak, and when attacking anyone at its nest, utters a rather loud croak as it stoops, possibly with a view to instilling fear.

GENUS *MICROHIERAX*.

The genus *Microhierax* contains several tiny birds worthy of a very high position among the Eagles and Falcons on account both of their beauty of form and wonderful daring and pluck. According to Sharpe's Hand-list there are six species of *Microhierax* confined to southern Asia and Malaya, of which three enter Indian and Burmese limits. Two of these, *Microhierax melanoleucus* and *M. fringillarius*, are very closely allied, whilst the third, *M. cærulescens* (or *M. eulomus*), differs in having a white collar and red thighs.

***Microhierax melanoleucus.* (Pl. II. fig. 5.)**

The White-thighed Falconet.

This little Falcon is found over the whole of the Assam Hills, both north and south of the Brahmapootra, from Bhutan to Sadiya in the north, and from Cachar and Sylhet

in the Surma Valley to Margherita in Lakhimpur in the south. It also occurs in Manipur, the Looshai Hills, and the upper Western Chin Hills.

The only account hitherto published of this bird's breeding is the one by myself, which appeared in vol. xi. of the Bombay Natural History Society's Journal, but since then I have been fortunate enough to take other eggs.

The first nest found by me was taken at Gunjong, North Cachar Hills, on the 13th of March, 1889; I was prowling about one evening with my gun, shooting an odd cock Jungle-fowl or two for the pot and taking notes and observations on birds generally, when I noticed what seemed to be a small black-and-white bird disappear into a hole in a branch of a tree high overhead. Knowing that there were no Woodpeckers or Barbets anything like this bird, and anxious to ascertain what it could be, I hammered on the trunk of the tree until it reappeared, when I at once shot it, and greatly to my surprise found it to be a White-thighed Falconet.

At this time I had not read Bingham's account of the nesting of *M. cœrulescens*, so that I thought the Falconet must have gone into the Barbet's hole to rob it of eggs or young, and in order to see if this was the case, I climbed up the tree and opened out the hole. At first I could feel no eggs in it, but brought out two or three handfuls of beetles' wings and other remains of insects, and then felt a single egg lying in the bottom of the hole, which I secured and brought down. This egg, though it had been originally white, and was in size much the same as that of a Blue-eared Barbet, was of so totally different a texture that I saw at once it did not belong to any bird of that family. In size it measured 29.1×22.3 mm., and in shape was a very obtuse blunt oval; both ends were practically the same in size, whilst the texture was half-way between that of Barbet's eggs and of eggs of the Lark-heeled Cuckoos of the *Centropus* group. The chalky covering is not nearly so thick or so crumbly as it is on the eggs of those birds, but there is enough to make a distinct covering which can be scratched off with a knife. The whole

surface is much stained with yellow and grey, presumably from the rotten insect-remains upon which it had been lying, although it was quite fresh.

Whilst examining the bird and egg under the tree in which the nest-hole was, the mate of the former came wheeling round and round, but as I did not require it as a specimen for identification, I did not shoot it. The bird killed proved to be a female.

This particular nest-hole was made in a branch of a dead tree, standing in a Naga "jhum," or cultivation clearing, surrounded on all sides by dense bamboo and tree jungle, in which, however, there were other similar "jhums." The trees in these clearings are not cut down by the Nagas, but merely ringed so that they die within a few weeks, though it may be years before they rot away and fall. The branch in which the Barbet had bored her nest-hole was about 40 feet above the ground, with the entrance cut, as usual, in the lower surface of the bough.

A second egg brought to me by Nagas, and said to have been taken from a deserted nest-hole of a Barbet or Woodpecker, was similar to the above in size, shape, and texture, but was well marked with bold reddish blotches like those on a Sparrow-Hawk's eggs. Thinking that they had been faked by the Nagas, I tried to rub them off, but only succeeded in taking off the soft outer covering and leaving the hard inner shell exposed. It may be, therefore, that this little Falcon does sometimes lay spotted eggs. This egg measures 27.7×22.7 mm.

Other eggs taken in the Khasia Hills are exactly like that first described, and were taken on each occasion from holes in trees excavated either by Woodpeckers or Barbets. In one case the tree was one standing in a patch of rice cultivation on a hillside covered elsewhere with bamboos, and a few scattered trees; in another the hole had been bored in the under surface of a large branch high up in a tree standing on the outskirts of evergreen forest.

In Dibrugarh, Assam, where the bird was much more common than in either the North Cachar or the Khasia Hills,

neither Dr. Coltart nor myself ever succeeded in finding a nest, though a pair undoubtedly bred in an enormous *Bombax* standing a couple of hundred yards or so behind Dr. Coltart's bungalow. A pair of birds were always about this tree, and as it stood in solitary grandeur in a fairly wide stretch of tea-garden, it was very easy to watch, but in spite of this we never succeeded in tracing either of the birds to their nest.

In shape, texture, and general appearance the few eggs I have seen have been all alike, as they also were in coloration with the exception of the second one described.

Two eggs measure respectively 28.7×23.0 mm. and 29.0×22.8 mm.

The breeding-season apparently begins early in March, and extends through that month and April into the first few days of May, but most eggs will undoubtedly be found in March and the first half of April. On the other hand, an occasional clutch, possibly a second laying, may be taken as late as July.

Like most Eagles and Falcons, these little birds pair for life, and keep close to their same home surroundings year after year; but owing to the height at which they breed, it is often almost impossible to spot their nest-hole, so that season after season they escape molestation.

Despite their tiny size, the little Falcons of this genus are amongst the gamest of the game, and unite the dash and pluck of the true Falcons with the imperial attitudes and demeanour of the Eagles. In the 'Avicultural Magazine' (vol. v. 1914, pp. 93-98) I gave an account of one of these little birds which I kept for about two years in an aviary. At first I kept in the same cage a dozen little Kestrels (*Erythropus amurensis*) and a pair of large Woodpeckers (*Chrysocolaptes gutticristatus*). The latter were certainly three times his size and weight, but eventually he killed the female, and I had to remove the widower to save his life.

In all his ways he was an intolerable little bully, and though he never molested the Kestrels as long as they kept well away from his particular perch, he resented all approach

to familiarity on their part, and treated the few frightened advances made with the utmost contempt. He really did not appear to know what fear meant; to me and my servants he was merely condescending; while we pampered him he accepted what we had to offer, but if he did not approve he bit us, solemnly, though hard, and hissed his annoyance at us in the worst of bird-language. As a rule, he was an extreme little dandy, with the glossiest of black and the snowiest of white plumage, all kept very tight and close. When annoyed, however, he hunched his shoulders up, dropped his head low with opened beak, and sat with slightly extended wings and ruffled plumage to express his anger.

I imagine that on the whole insects form the greater part of these Falcons' food, especially during the season when the white-ant or termite is in flight, when all insectivorous birds gorge on them. At the same time they attack and eat birds, reptiles, small mammals, such as mice and bats, many of which far exceed themselves in weight and size. The tamed bird referred to above was caught because his feet had become entangled in the breast-feathers of a Scimitar Babbler, which was so heavy that he could not lift it, and all he could do was to scream his rage at a native who captured him in his puggree.

It is most interesting to watch Pigmy Falcons pursuing termites, and Dr. Coltart and I found them to be far more accurate and quick in catching them than any other bird we had an opportunity of watching. We often saw Rollers, various kinds of King-Crows, Flycatchers, Mynas, Bee-eaters, Kites, and other birds hawking all together over a flight, but none were nearly so expert as little *Microhierax*. Their movements on the wing werè very like those of *Artamus fuscus*, the Swallow-Shrike, in whose company we frequently found them, but they were quicker, and their actions of course were aquiline, *i. e.*, they seized the termites in their feet and not with their bills. It was rather remarkable to find that all quarrelling and all signs of fear of the small birds for the birds-of-prey, more especially for the

Falconets, seem to disappear during a termite flight; presumably the abundant and delectable food available did away, for the time being, of any need for it.

We never found these little Falcons away from the hills or from the wild and broken country at their base; on the other hand, they did not ascend the hills to any height.

Microhierax caerulescens.

The Red-thighed Falconet.

With the exception of the hills and mountains in which *M. melanoleucus* is found, the Red-thighed Falconet is found throughout Garhwal, Nepal, and the Himalaya north of the Assam Ranges into the Shan States, eastern Burma, Siam, Cambodia, and northern Malaya.

The nest and eggs were first taken by Bingham, and are described in full in Hume's 'Nests and Eggs of Indian Birds.'

The eggs, four in number, were found in a hole in a decayed branch of a Pymma-tree at a great height from the ground, and were only discovered through seeing the birds flying into the hole. As seems to be invariably the case with these Falcons, there was a thick pad of beetles' wings and other insect-remains, upon which the eggs were lying, but otherwise no attempt had been made to build a real nest.

Hume describes the eggs as: "regular, moderately elongated ovals. The shell is very thin and fairly close in texture, but has no appreciable gloss. The original colour . . . is a dead white, but the eggs as found were all suffused with a dirty yellow tint."

"The eggs vary from 1.1'' to 1.3'' in length and from .85'' to .88'' in breadth. They are equally unlike eggs of *Falco*, *Astur*, and *Circus*. As to size and shape, I can match them exactly with large eggs of *Cyanops franklini* or small ones of *M. marshallorum*, as regards texture and tint of discoloration I can match them exactly with some eggs of *Taccocua affinis*."

These eggs were taken on the 14th of April, in Tenasserim.

An egg sent to me from Perak, and obtained from the hills inland about twenty miles from that place, agrees exactly with the description of the eggs taken by Bingham. It measures 29.2×23.8 mm., and is a regular, but rather broad oval in shape, and has the same curiously stained surface. It was found on the 11th of February, 1903, in a deserted Barbet's or Woodpecker's nest-hole high up in a large tree in forest cultivation. The female was captured in the hole and sent with it. The nest consisted as usual of a mass of insect-remains, and all these small Hawks seem to have the same habit of eating their prey inside the nest-holes.

Microhierax fringillarius.

The Black-Legged Falconet.

This little Falcon, which replaces the White-thighed Falconet in the extreme south of Tenasserim, the Malay Peninsula, and further south, is even less well known than the two other Indian forms of Falconet. The only record of its nidification is that of Davison as quoted in Hume's 'Nests and Eggs.' The female and male were both shot, and the former, which was seen to come out of a disused Barbet's hole, contained a fully-formed egg ready to be laid, and in appearance exactly like those already described of *M. melanoleucus* and *M. cærulescens*, but of course without stains. As usual the nest-hole, although no eggs had yet been laid, contained a mass of insect-remains; according to Davison, principally of Lepidoptera and Neuroptera, whereas those of *M. melanoleucus* examined by me consisted principally of Coleoptera mixed with feathers from many birds.

The habits of all three of the species which are found within Indian limits appear to be much the same, though Davison, probably because he knew *M. melanoleucus* less well, considered the present species to be the bolder. He says that on one occasion he saw it stoop at a Blue Rock-Thrush (*Petrophila solitaria*); on another occasion he shot one which had caught and killed a Swallow. He also recorded that he had taken the remains of birds, much

bigger than the Falcons themselves, from the stomachs of the latter.

From what I have seen of these Falconets and their hunting, they seem to stoop at their prey on the wing, just as the larger Falcons do, striking it, when successful, with the hind claw, ripping the back open, and hurling it to the ground, where the slaughter is finished and the bird consumed as it lies. When, however, the bird is a very small one, such as a White-eye or a *Munia*, it is carried to the nearest tree to be eaten at leisure and in comfort.

IV.—*Erythrism in Birds' Eggs*: an Address read at the Third Oological Dinner on 26 September, 1917, by E. C. STUART BAKER, M.B.O.U.

AMONGST the eggs I am exhibiting to-night there are perhaps very few that are startling either on account of their great rarity or exceptional coloration, but they serve to illustrate some remarks I would like to make on the subject generally of erythristic oology.

In the first place, it seems to me that the term erythrism has been too generally used, both by egg-collectors and oologists, as applying merely to abnormal red coloration in those eggs which normally show none. It should, however, be given a far wider interpretation than this, for it means, roughly speaking, the fact of being, or the act of becoming, red. If this is correct, then it follows that erythrism can be at once divided into two classes, normal and abnormal, and these again, especially the former, subdivided into many others.

As yet, so far as I know, normal erythrism in eggs has never been studied in connection with the classification of birds; yet it is possible that it may prove to be quite an important item amongst the many ways in which we egg-lovers believe that our particular branch may be of value. As regards abnormal erythrism, nothing further seems to

have been attempted beyond the exhibition of many most beautiful and extraordinary eggs.

In view, therefore, of the fact that the subject is so novel a one, my remarks must be held as purely suggestive of the lines upon which we might work in trying to ascertain what erythrism can teach us. It must also be remembered that erythrism, or its absence, is only one of many characters of each egg, and its value can only be estimated when considered in combination with the others.

Probably the first point which would strike any one on examining a really large collection of eggs is the extraordinary and erratic distribution of erythrism. In some cases it appears to be both constant and consistent throughout a whole order, family, genus, or species, whilst in others there appears to be no limit to its variation. The second point which would strike the systematist is that, as with birds themselves so with their eggs, a character of the greatest help in one family, genus or species is of no use whatever in another. But even with these two points conceded, it still appears to me that erythrism may be justly used as an aid in determining, or as a guide to the determination of, bird classification.

In the following remarks I propose to very briefly outline facts already ascertained, and a possible way in which these facts may be developed scientifically and some deductions drawn from them.

The simplest way will probably be to consider orders, families, genera, species and subspecies in the sequence as written, and to deal with normal erythrism first.

As regards orders, we find that there are some which normally contain no erythristic eggs, others which contain both erythristic and non-erythristic eggs, a few in which erythrism is the dominant colour, and still fewer in which all the individuals lay erythristic eggs. It is not easy, however, to think of any order in which there are not few or many exceptions to the general rule of erythrism, but, taken as a whole, the eggs of the Accipitres must be considered as forming a good

example. It is true that a considerable number of these birds lay white or nearly white eggs, and indeed in a few cases, such as *Astur*, *Butastur*, and *Accipiter*, in some eggs the blue of the hard inner shell shows through the outer layers of calcite, but in no case is the blue tinge strong enough to dominate the general tone. Whatever colour there is, with the exception of this blue tint, is of some erythristic shade, and it is important to remember that even the eggs of those *Accipitres* which generally lay white ones, often show spots and blotches of colour which invariably contain some degree of erythristic coloration. The primary or superficial markings may be brown with any degree of red in them, whilst the secondary or subordinate ones are of some shade of grey, neutral tint, or lavender equally invariably showing some slight trace of the same. The eggs of *Pernis*, *Tinnunculus*, and many species of *Falco* can only be described as red eggs, and undoubtedly such eggs preponderate greatly in this order.

Before leaving the subject of erythrism as applied to orders, attention should be drawn to that remarkable group, the *Phaethontidae*, generally placed with the *Steganopodes*, but probably worthy of being raised to an order by themselves. The eggs of these, even more consistently erythristic than those of the *Raptores*, show remarkable affinities to the eggs of this order, as indeed do the birds themselves in many respects.

Amongst families it is a much easier matter to find examples in which all the species invariably lay erythristic eggs. There are many such, but there are two which to me, as a collector of Indian eggs, appear particularly striking, *i. e.*, the *Dicruridae* and *Brachypodinae*. The latter family—or subfamily as Oates calls it—has no member which does not lay truly erythristic eggs, and any field-naturalist can say, almost at a glance, whether an egg does or does not belong to it. To-night I have had to place a limit on my exhibition, space and the difficulty of carriage necessitating this, but in the one box shown there are examples of ten

genera and forty species of Indian Bulbuls, and those who know the African species will see that many of them could be duplicated by these and even substituted for them without fear of detection.

Sharpe, in his Hand-list, includes Oates's *Brachypodina* in the *Pycnonotidæ* together with the genera *Ægithina*, *Æthorhynchus*, *Chloropsis*, and *Irena*. The eggs of these four genera would at once lead us to infer that they belong to quite different groups, and a careful study of the birds, to my mind, confirms what the eggs first tell us. *Irena* is probably a Thrush, to be placed somewhere near the genus *Coccyus*, whilst the other three genera must be placed with other Timeleine forms or else constitute a group by themselves.

Next to families and subfamilies, and before dealing with single genera, it is necessary to consider certain groups of genera which cannot be excluded from families containing many others, yet which are remarkable for the close resemblance between their eggs, shown, in so far as we are concerned this evening, by their erythrism. For this purpose I show three small boxes containing eggs of the Sylviine genera *Urosphena*, *Horeites*, *Neornis*, *Horornis*, and *Cettia*. So closely are these allied that many naturalists have merged two or more of them into one. This combination of the genera seems to be sound the more we study the birds, and the wonderful erythristic character of the eggs would certainly seem to endorse it.

After groups of genera we naturally come to isolated genera, all the species of which show erythrism well defined though varying somewhat in degree. Such genera are exemplified to-night by *Chloropsis*, *Pyctorhis*, and *Piprisoma*, each with several species, but such examples may be added to almost *ad infinitum*.

To generic erythrism naturally succeeds specific erythrism, and we find that many genera contain species some of which lay erythristic eggs, whilst others lay eggs in which there is no trace of red. To such genera belong the species

Pellorneum ignotum, *Prinia socialis*, and *Ruticilla frontalis*, which all lay truly erythristic eggs, whereas the majority of the remaining species of the same genera lay eggs of quite different coloration. To show the contrast, the erythristic and non-erythristic eggs are shown together.

Finally, normal erythrism may be shown in the eggs of one subspecies of a species, all the rest of which show none. This is, I think, a rare form of erythrism, but occurs now and then. The exhibit shown is a very beautiful example, the eggs of *Prinia inornata blanfordi* being fine red eggs, whilst *P. i. inornata*, *P. i. extensicauda*, *P. i. burmanica*, and *P. i. jerdoni* all lay equally beautiful, but bright blue, eggs.

The above embraces examples of the facts which are already known to all oologists, though perhaps they have not yet been enumerated in a similar manner; when we advance beyond these facts we seem at once to enter the second class, that of abnormal erythrism. Here, however, we enter so wide a field that I have really not attempted to show anything beyond a couple of species, *Corvus splendens* and *Timelia pileata*, in which erythrism is very rare, and two other species, *Dendrocitta rufa* and *Orthotomus atrigularis*, in which it is so common that it becomes an almost normal phase of coloration. Exceptionally rare and beautiful examples of erythrism are being shown by many of our members to-night, and will more than serve as illustrations of abnormal coloration.

From the remarks I have made and the exhibits shown, I hope some deductions may be drawn. Thus it may suffice to maintain that if coloration and other characteristics of eggs form any guide to systematic classification, erythrism, or its absence, should be one type of coloration worthy of careful consideration. As regards families, it shows that a non-erythristic egg cannot belong to any bird which should be placed amongst the Bulbuls. Again, no non-erythristic egg can be laid by any bird entitled to a place in the *Tribura* group of genera. Lower down the grades we find that, whereas all the other known species and subspecies of

Pellorneum lay non-erythristic eggs, *Pellorneum ignotum* and its subspecies lay quite red eggs. So true is this that I may point out that *P. i. cinnamomeum* until very recently was placed in another genus, *Drymocapthus*, and it was a knowledge of its curiously erythristic eggs which enabled me to show Col. H. Harington where it should be placed.

From the *Prinia inornata* exhibit quite a different line of reasoning may be worked out, and possibly we are here given a clue to one of the causes of erythrism. The breeding-ground of *Prinia*, generally speaking, is dry grass or scrub-covered land, or mixed low bush and grass country, free from water and above flood-level. *P. i. blanfordi*, however, which lays the red eggs, is to be found breeding almost invariably in heavy grass in marshes, swamps, or flooded land. Is there any connection between erythrism and humidity?

So far my exhibit has dealt with forms of erythrism for which we can advance no reason or cause, or, as in the last case, can offer mere conjecture or suggest a line for further research. Erythrism can, however, be carried somewhat further than this, for there is a form of it which we can explain as the direct result of evolution with a definite cause. My last and most interesting exhibit gives examples of this.

First, the large eggs shown at the top of the box consist of two clutches of eggs of the Yellow-wattled Plover, *Sarciophorus malabaricus*; one of these is normal, the second a very beautiful type of erythrism. In this particular instance there are good reasons for the evolution of a red egg, and consequently it is not confined to a single odd clutch here and there, but is found in very numerous instances within a certain area. The probable solution of this case is due to the researches of Mr. J. Stuart of Travancore, who has spent much time and labour in its elucidation. It appears that in the south-west of India, near the coast of Travancore, there is a belt of country where this Plover is resident in considerable numbers, augmented in the breeding-season by a good many more

which are locally migratory, moving up and down the coast as food and other conditions exert their influence upon them. Now a certain portion of this breeding-ground consists of a dry red laterite, and over this area a large proportion of the eggs found are red also. Our conclusions are that the red eggs are laid by the resident birds and the others by the visitors. It would seem that through the countless generations of Plover which have habitually bred on this red soil, a certain number in each generation have laid eggs more inclined to be erythristic than the others, and such eggs assimilating with the ground better than the ordinarily coloured ones have escaped destruction by vermin in greater degree than the latter. In each generation the erythrism has been emphasized by selection until the present wonderful stage of adaptation has been reached. That it is not casual erythrism is shown by the fact that in one breeding-season Mr. Stuart and his collectors found—I do not say took—over seventy of these wonderful eggs.

Even admitting this reason for the evolution of the red *Sarciophorus* egg, we are still only in the first stage of investigation and suggestion, for we have also found that the Red-wattled Lapwing, *Sarcogrammus indicus*, which breeds freely on the same ground, has made no advance in the evolution of a red egg. Why should this be?

The other two groups of eggs shown are similar types of evolution, though in their cases the immediate need for erythrism has been different. They are both Cuckoos' eggs in which erythrism has been evolved, not for their protection against destruction by vermin, but for the purpose of deceiving certain selected fosterers into undertaking their incubation.

The central set of eggs belong to the small Indian Cuckoo, *Cuculus intermedius*, and by this bird we find that two, and only two, very strongly contrasting types of egg are laid—the one pure white, and the other some shade of terra-cotta or chocolate. It is interesting to observe that, though some 150 eggs of this little Cuckoo have passed through my

hands, I have never seen an egg intermediate in colour between the two types—a fact which shows that evolution has advanced practically to completion. The white eggs are, of course, deposited in the nests of birds which lay white eggs or eggs which are not too vividly spotted upon a white ground, such as the *Phylloscopi* and *Acanthopneuste*; the red eggs, on the other hand, are placed in the nests of such birds as *Horornis*, *Cettia*, *Oligura*, *Tesia*, etc., which lay eggs very similar in colour. Over the greater part of its range both types of eggs of this Cuckoo may be found, for suitable fosterers also occur everywhere therein; but in some places one type will preponderate greatly over the other, according as the white-egg or the red-egg fosterer is the more numerous. In Japan, however, so far as I am aware, the terra-cotta type of egg is the only one ever laid, and that is simply because the *Cettia*, in whose nest it is placed, is so common and has proved so good a fosterer that it has not been necessary to select any other, and the Cuckoo practically invariably places her egg in that bird's nest.

The last group contains eggs of the Indian Plaintive Cuckoo, *Cacomantis passerinus*. This Cuckoo, over nearly the whole of the area in which it breeds, lays eggs which are either a pale blue or white, faintly and sparsely marked with reddish; these are deposited in the nests of *Orthotomus sutorius*, *Cisticola*, *Suya*, or some other small Warblers with whose eggs they agree very well. In the Deccan, however, the most common Warbler is *Prinia socialis*, the Ashy Wren-Warbler, and this has accordingly been selected by the Cuckoo as the most suitable nurse for its young. But this Warbler lays red eggs, with which the great majority of Cuckoos' eggs would contrast most conspicuously; in consequence, therefore, a red egg has also been gradually evolved for the Cuckoo by the foster-parents in each generation destroying those which were most unlike their own, until a red stage has been arrived at sufficient to deceive the Warblers and ensure the perpetuation of the Cuckoos.

V.—*On Birds recently collected in Siam.* Part I. Phasianidæ—
Eurylæmidæ. By C. BODEN KLOSS, M.B.O.U.

INTRODUCTION.

DURING September and November 1916 I spent a couple of months' vacation leave in Siam with three Dyak collectors : we got in about thirty-three actual working days, and our efforts were largely devoted to obtaining mammals as well as seeking for birds and reptiles.

Owing to the fact that the state of the country made it almost impossible for us to reach good collecting-ground in the districts I visited, if we were to do any collecting at all in the time available, the results are much smaller than perhaps they would have been in more favourable circumstances, and the collection of birds only numbers about 420 specimens of 145 species.

I was told that I had arrived at about the worst time possible for collecting, since near the end of the year the rains are at their height, the low-lying parts of the country flooded and the streams and rivers much swollen. This, indeed, I found to be the case ; we were everywhere stopped by floods, and instead of collecting at chosen localities we had to work at places where one finally starts for these. We were hardly in forest at any time ; also many species of birds were in a state of moult. When I left Siam, towards the end of November, conditions had begun to improve rapidly ; it was the time when our visit should have commenced.

I reached Korat on September 30, with the intention of travelling eastward down the Nam Mun towards Ubon, but could not get to the river because the intervening country was flooded to a depth greater than the height of floor of our bullock-carts. We therefore started south-eastwards towards the mountains, where good forest was reported three or four days away, for I hoped we should travel over rising ground in that direction ; but on the

second day progress was stopped by wide and deep inundations. As the country through which we passed was covered with scrub, bamboo, or open jungle, in which we saw scarcely any signs of mammals or birds, there was no inducement to make a camp; so we returned immediately to Korat. It was impossible not to admire the way in which the Siamese "kwien" (a bullock-cart built without a scrap of metal of any sort) negotiated the floods and, in many places, the appalling tracks through the roadless bush.

From Korat we went back westward about thirty miles to Lat Bua Kao. From the village gently-rising forested hills, which I had planned to visit, were visible to the south; but heavy rain, followed by a 25-foot rise of a river between, and the washing away of the only bridge put an end to hopes in that direction, and we had to be content with working the country to the north of the village. This consisted of scrub and bamboo, and a few patches of very poor dense forest which harboured scarcely any vertebrates. After a fortnight interest in this locality began to diminish, and we returned to Bangkok.

Next I went to Sriracha, on the west coast of the Inner Gulf, and, hiring a mat-sailed "rua-pet" about 35 feet long, visited the islands to the south as far as Koh Mesan, off Cape Liant, and spent two or three days ashore at the village of Sata-hip in Shelter Bay before returning to Bangkok again after ten days' absence. Birds were very scarce at all places visited during the cruise.

The next collecting-place was the village of Pak Bu, in the rice-fields near the mouth of the Tachin River or Nam Supan, about twenty miles west of Bangkok; only three or four days were spent in this locality, as it was soon exhausted.

The final excursion was a ten days' visit to Koh Lak, situated on the east coast of the Gulf of Siam in about lat. $11^{\circ} 50'$ N.; again floods cut us off from the forest and the hills and confined us to the open country near the shore.

Thus the collections made largely illustrate the more or less open country of Siam, and provide in some ways an interesting contrast to the results of my former visit, which were obtained in the forested country of the south-east ('Ibis,' 1915, pp. 718-761).

The two places where most specimens were obtained, and which recur so often in the body of this paper, I have merely referred to as Lat Bua Kao and Koh Lak. Lat Bua Kao is in eastern Siam, about thirty miles west of Korat and just within the eastern foot of the hills which separate the slightly elevated, shallow basin of eastern Siam from the central Siam plain and the Menam river-system. My visit was made in October.

Koh Lak, in the State of Pran, south-western Siam, is on the east coast of the Malay Peninsula, a little south of the latitude of Mergui. The town is now called Prachuap Kirikan; but the other name is so much better known that I have continued to employ it, though it really applies to some small limestone islets lying a few hundred yards from the shore. "Koh" means island, but in this instance all my collections were obtained on the mainland: in all other cases where the word occurs in combination the specimens recorded are insular. I stayed at Koh Lak in November.

The divisions of Siam which I have used (central, eastern, etc.) are as defined in P.Z.S. 1916, p. 64, and 'Journal of the Natural History Society of Siam,' i. p. 250 and map, except that I have now divided the longer continuous strip there called western and peninsular Siam into three areas, and call the middle portion south-western Siam. The new division lies between the reduced areas of the other two, and stretches from the Petchaburi River to the Isthmus of Kra—roughly speaking, between latitudes 13° and $10^{\circ} 30' N.$ Western and south-western Siam are therefore co-terminous with the Burmese province of Tenasserim; while peninsular Siam is restricted to the northern part of the Malay Peninsula below the Isthmus of Kra, and has the Malay States to the south of it.

I have not burdened this paper with much local synonymy, and only a few references will be found to publications dealing with other countries, but which elucidate points of interest. Count Nils Gyldenstolpe, who writes very happily in English, has given a list of papers dealing with Siamese birds in the report on his last collections (Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, p. 4, 1916). To these I would add 'Stray Feathers,' to which direct application should be made by anyone working on Siamese birds: seen through the medium of Oates or Blanford, or the 'Catalogue of Birds,' the value of their contents cannot always be appreciated.

With regard to the methods of taking some of the measurements, it may be well to say that the total length (T. L.) is taken after the specimen has been well supplied and straightened out, but not unduly stretched; that the tail (T.) is measured from the angle between the bases of the inner pair of feathers to the tip of the longest feather; and that the wing-length (W.) is the distance in a straight line, taken on the inner side with a graded rule, between the anterior bend of the wing and the end of the longest feather: the wing is not flattened in any way, and the measurement is nearly always a chord.

With regard to the individual dimensions given: to the first specimen mentioned belongs the first measurement of each kind, to the second bird the second measurement, and so on throughout. The measurements are in millimetres.

The following new species and subspecies are described in this paper:—

Thereiceryx flavostrictus prætermisus, subsp. nov. (S. China.)

Gecinulus viridis robinsoni, subsp. nov. (Malay States.)

Micropternus brachyurus williamsoni, subsp. nov.

M. b. lanka, subsp. nov. (Ceylon.)

M. b. mesos, subsp. nov. (Cuttack, India.)

M. b. humei, subsp. nov. (W. Himalayas.)

Callolophus mineatus perlutus, subsp. nov.

Chrysophlegma flavinucha lylei, subsp. nov.

Chrysocolaptes strictus chersonesus, subsp. nov. (Singapore.)

Volvocivora koratensis, sp. nov.

Chloropsis aurifrons inornatus, subsp. nov.
Otocompsa flaviventris minor, subsp. nov.
Mixornis rubricapilla connectens, subsp. nov.
Dicrurus annectens siamensis, subsp. nov.
Chalcoparia singalensis koratensis, subsp. nov.
Dicaeum cruentatum siamensis, subsp. nov.

List of Species obtained.

PHASIANIDÆ.

†1. *Lophura diardi* (Bp.).

1 ♂ ad., 1 ♀ imm. Lat Bua Kao.

Male. Iris yellowish-brown; orbital skin vermilion; bill dull yellowish-grey; cere brown; feet brilliant blood-red; spurs and claws pale brownish-horn.

Total length 680; tail 280; wing 246; tarsus 99 mm.

Immature female. Iris brown; orbital skin pale blood-red; maxilla horny, mandible pinkish-grey; feet cerise.

Total length 445; tail 175; wing 174; tarsus 57.

Plumage of immature bird. Head and neck dull brown, slightly barred with fulvous and black on the occiput; sides of neck with small fulvescent patches; chin and throat whitish. Mantle, fore-neck, and sides of upper breast ferruginous, barred and vermiculated with black; scapulars mingled black, ferruginous, and buff; lower breast ferruginous, the feathers edged with white; abdomen greyish-white; thighs and flank-coverts mingled fulvous, grey, and white; lower tail-coverts pale chestnut barred with black. Wings black barred with black-spotted buff bands; the outer webs of some of the primaries and secondaries strongly suffused with fulvous; back, rump, and upper tail-coverts black barred with buffy; middle pair of tail-feathers black barred with pale buff; next pair black barred proximally with buffy, distally with pale chestnut; remaining feathers pale chestnut barred with black on the inner webs, the barring least on the outer feathers.

Though I obtained only these two examples (which were flushed in little meadows of long grass amongst open forest and scrub) the birds seem to be fairly common in the neighbourhood, as Mr. W. J. F. Williamson's collectors,

who had worked at Lat Bua Kao in the month before my visit, got several examples there in beautiful plumage, while my male is badly in moult.

Diard's Pheasant is a popular aviary bird in Bangkok.

† 2. *Francolinus chinensis* (Osbeck).

1 ♀ ad. Lat Bua Kao.

Iris brown; nostrils, culmen, and tip of bill black, remaining parts fleshy; feet orange-yellow.

T. L. 280; W. 134; tarsus 37; bill from gape 24.

Flushed in a patch of long grass surrounded by bush.

† 3. *Gallus gallus* (Linn.).

Gallus bankiva bankiva Baker, Journ. Nat. Hist. Soc. Bombay, xxv. 1917, p. 18.

1 ♂. Lat Bua Kao.

4 ♂. Koh Mesan, off Cape Liant, S.E. Siam. Nov. 1916.

1 ♂, 1 ♀. Koh Lak.

Males. Iris deep orange, orange-brown, or umber; bare skin of head fleshy to pale crimson; maxilla black or brown; mandible horny, pale grey, or fleshy; feet brownish-grey, slaty-grey, or plumbeous-black.

Female. Iris dark; skin of head deep fleshy; feet dull plumbeous.

The four cocks from Koh Mesan have bluish-white neck-patches, which are absent in the mainland birds.

Males: W. 210*, 212*, 218, 219*, 224, 224.

Female: W. 175.

Jungle-fowl were common at every place visited, and were easily obtained in the early morning in open bush or clearings at the edge of forest. I never succeeded in getting an old male with a perfect tail, and only preserved a few of the birds we shot.

Stuart Baker has recently dealt with the Common Jungle-fowl, of which he recognizes two forms: one ranging from India through Assam to Sadiya, which he calls *Gallus bankiva ferrugineus*, and the other occurring in Malaya,

* Sub-adult.

Indo-China, and China, denominated *G. bankiva bankiva*. The former is said to have the hackles more yellow and more lanceolate than in the latter, in which they are redder and broader-tipped; but the main character relied on for separation is that in the Indian bird the ear-lappets are invariably red, while in the other they are almost equally invariably white or pinkish-white (*t. c. s.* pp. 2, 3).

Through lack of material I am in no position to endorse or contest Mr. Baker's conclusions; but the series I obtained in Siam seems to show that the latter distinction is not a good one, for I do not think we need entertain the idea that the island birds are in any way distinct from those of the adjacent mainland.

I do not know of any reason for rejecting the name *gallus* for the species; but while there no doubt occur two distinct forms of the Common Jungle-fowl, more or less as indicated by Baker, I do not employ *bankiva* here for the Malayo-Siamese bird: this name was based on Sundanese examples, and an examination of recently-collected material from Java shows that there occurs in that island a very distinct form, for which I think it will have to be reserved.

COLUMBIDÆ.

† 4. *Osmotreron bicincta domvilli* (Blyth).

2 ♀. Lat Bua Kao.

1 ♀. Koh Mesan, off Cape Liant, S.E. Siam. Nov. 1916.

Iris—inner ring blue, outer pinkish-yellow; bill pale grey-blue; feet cerise.

T. L. 270, 275, 270; W. 146, 146, 149.

✧ 5. *Treron curvirostra nipalensis* (Hodgs.).

2 ♂. Lat Bua Kao.

Iris yellow; orbital skin apple-green; bill—proximal half crimson, distal half greenish-ivory; feet cerise.

T. L. 286, 260; W. 144, 139; bill from gape 21, 22.

The smaller bird has the white areas of the thighs and abdomen very reduced.

† 6. *Carpophaga ænea* (Linn.).

2 ♂, 1 ♀. Lát Bua Kao.

Iris and edge of eyelid crimson; bill blue-grey, cere plum-colour; feet plum-colour.

Males: T. L. 410, 410; T. 147, 126; W. 230, 223; bill from gape 32, 33; exposed culmen 21.5, 23.

Female: T. L. 390; T. 131; W. 120; bill from gape 32.5; exposed culmen 22.

This Pigeon was fairly common, and we shot numerous individuals, but did not preserve them because they were so often damaged by shot or by their falls from tree-tops. The three birds retained illustrate both the vinaceous and grey phases of colour, the latter being shown by the two smaller specimens.

I was struck by the small size of the bills of my birds, but the loan by Mr. W. J. F. Williamson of a series from various parts of Siam, including three more specimens from Lat Bua Kao, shows that this is only an individual peculiarity, though none of the Siamese birds have bills quite so large as the largest of a Malayan series.

† 7. *Alsocomus puniceus* Tickell.

1 ♀. Koh Lak.

Iris salmon-pink; eyelids and cere dull crimson; bill pale greenish-grey, base of mandible dull crimson; feet crimson.

T. L. 350; W. 208.

Nowhere a common bird in the Malay Peninsula: it does not seem to extend south beyond Peninsular Siam.

† 8. *Streptopelia suratensis tigrina* (Temm.).

2 ♂, 2 ♀. Lat Bua Kao.

1 ♂. Koh Lak.

Iris pink, pinkish-yellow, or yellow; orbital skin grey; bill black; feet dull cerise or livid red.

Males: T. L. 320, 310, 318; W. 147, 149, 151; bill from gape 21, 21, 21.

Females: T. L. 330, 315; W. 147, 149; B. f. g. 22, 21.5.

Very common everywhere in suitable localities, such as open ground in the neighbourhood of villages. Often seen feeding on the ground in large flocks, and when disturbed only flies a short distance.

9. *Ænopoelia tranquebarica humilis* (Temm.).

1 ♀. Koh Lak.

Iris dark ; orbital skin grey ; bill black ; feet dark fleshy-brown.

T. L. 242 ; W. 136.

Very pale and grey on the under surface, with the brown of the back and wings dull, differing notably in this respect from another female (W. 137) from Chainat, Central Siam (coll. H.R.H. Prince Chumporn)—in fact, the description of the female of *O. t. tranquebarica* seems to well apply to it.

Mr. W. J. F. Williamson has lent me a pair of these Doves from Bangkok, an intermediate locality. The female is not quite so dull and grey as my example, which it resembles in having a grey-tinged head and greyish feathers immediately above the nuchal collar ; but it is still quite different from the bright brown Chainat bird, which has very little grey on the abdomen and the neck concolorous with the back below the black collar.

A female from Manila, Philippine Islands, is yet paler and more fulvous than the Chainat specimen, and has the fore-neck and breast tinged with vinous (W. 127 mm.) ; the male Bangkok bird agrees with a Manila male and is about the same size.

Turtur humilis of Temminck was stated to occur in Bengal and the island of Luzon, and the former, as the first region cited, should be regarded as the typical locality. If Philippine birds differ, the name *Columba cinerea* of Scopoli is available for them.

O. t. humilis probably does not extend southwards beyond Tenasserim, and examples recorded from Malacca must certainly have been cage-birds.

RALLIDÆ.

- +10. *Amaurornis phœnicura chinensis* (Bodd.).
Stresemann, Nov. Zool. xx. p. 304 (1913).
1 ♂. Tachin, Central Siam. Oct. 1916.
W. 170; T. 72; Ta. 53; B. f. g. 40.

CHARADRIIDÆ.

- +11. *Sarcogrammus indicus atrinuchalis* Blyth.
1 ♂. Lat Bua Kao.
1 ♂. Koh Lan, Inner Gulf of Siam. Oct. 1913.
2 ♀. Koh Lak.
Iris hazel or crimson; wattles dull carmine; bill—
proximal half dull crimson, distal half black; feet dull
yellow, "knees" and toes tinged with olive or grey.
Males: T. L. 330, 330; W. 215, 212.
Females: T. L. 310, 322; W. 195, 206.
Very common in open country.
- +12. *Charadrius dominicus* P. S. L. Müll.
1 ♀. Koh Lak.
Iris dark; bill black; legs dark plumbeous; feet black.
T. L. 253; W. 161; Ta. 41; B. f. g. 29. Distance
between extremity of longest secondaries and end of wing
50 mm.
- +13. *Charadrius geoffroyi* Wagl.
1 ♂. Koh Lak.
Iris dark; bill black; legs stone-grey; feet plumbeous-
black.
T. L. 212; W. 143; Ta. 36.
- +14. *Charadrius alexandrinus dealbatus* (Swinh.).
Ægialites dealbatus Swinhoe, P. Z. S. 1870, p. 138.
Charadrius alexandrinus dealbatus Hartert & Jackson,
Ibis, 1915, p. 528.
1 ♀. Koh Kram, Inner Gulf of Siam. Nov. 1916.
2 ♀. Koh Lak.

Iris dark ; bill black ; legs stone-grey or yellowish-grey ; feet grey-black.

T. L. 175, 173, — ; W. 108, 110, 108 ; Ta. —, 26·5, 28 ; B. f. g. 21, 18, 20.

The bird from Koh Lak has the head slightly tinged with sandy-buff.

Hartert and Jackson, in their "Notes on some Waders" (*l. c. s. p.* 527), recognize two subspecies of *C. alexandrinus* as winter visitors in south-eastern Asia—*C. a. alexandrinus*, "bill generally about 14–15 mm., hardly ever longer" (Malay Peninsula and Islands), and *C. a. dealbatus* Swinh., differing "in its considerably stouter and longer bill . . . generally 16–17·5 mm." (Amherst, Tenasserim). By "bill" (of which no definition is given) I understand in this instance the exposed portion of the culmen, which in my Koh Lak birds measures 16·3, 17, 18 mm., while a female and two males from the southern part of the Malay Peninsula (Selangor, Malay States) have exposed culmens of 18, 19, 19 mm. and wings of 112, 110, 108 mm. respectively.

As the type of *C. a. dealbatus* was said to have a bill of ·75 inch, or 19 mm., Hartert and Jackson are evidently wrong in their diagnosis of the race ; and its range must be extended to the south of the Malay Peninsula, where, according to these authors, the true *C. alexandrinus* occurs, though it is not yet represented there in the local museums.

†15. *Totanus glottis* (Linn.).

1 ♀. Bangkok, Central Siam. Oct. 1916.

W. 187 ; Ta. 57 ; B. f. g. 62.

ARDEIDÆ.

†16. *Butorides javanica* (Horsf.).

1 ♀. Tachin, Central Siam. Oct. 1916.

W. 170 ; Ta. 47 ; B. f. g. 76.

17. *Ardeola grayi* (Sykes).

1 ♂. Lat Bua Kao.

1 ♀. Tachin, Central Siam. Oct. 1916.

Iris yellow; orbital skin yellow and green; maxilla black; mandible yellow, base green, tip black; feet apple-green.

Male: T. L. 515; W. 221; Ta. 57; B. f. g. 79.

Female: T. L. —; W. 197; Ta. 52; B. f. g. 71.5.

+ 18. *Bubulcus coromandus* (Bodd.).

1 ♀. Koh Lak.

Iris pale yellow; bill deep yellow; feet black, soles pale olive.

T. L. 525; W. 249; Ta. 88; B. f. g. 77.

FALCONIDÆ.

+ 19. *Astur badius poliopsis* (Hume).

Micronisus poliopsis Hume, Stray Feathers, ii. 1874, p. 325.

1 ♂ ad. Koh Si Chang, Inner Gulf of Siam. Jan. 1915.

1 ♂ ad. Koh Lan, „ „ Oct. 1916.

1 ♀ ad. Koh Lak.

1 ♂ imm., 1 ♀ ad. Lat Bua Kao.

Iris yellow or crimson, or crimson with a narrow outer ring of yellow; bill black, base grey, cere yellowish-olive; feet yellow, sometimes tinged with greenish; claws black.

Males: T. L. —, 305, 310*; W. 195, 188, 181*.

Females: T. L. 360, 355; W. 210, 205.

The male from Koh Si Chang is an old bird, with pure white thighs and the middle pair of tail-feathers entirely devoid of dark bars or spots.

The immature male is brown above with a considerable exposure of white on crown, nape, and scapulars; cheeks and ear-coverts striped brown and white; under surface white with a brown median throat-stripe and dark patches on the feathers, very elongate on the breast but becoming broader than long on the flanks; thighs banded.

All adults exhibit a grey throat-stripe.

* Immature.

† 20. *Baza lophotes* (Temm.).

1 ♀. Lat Bua Kao.

Bill and feet pale blue-grey.

T. L. 310; W. 224. Length of crest-feathers 60 mm.

Though apparently fully adult, this specimen seems rather small for a female, but I have no reason to doubt that it has been properly sexed.

Hawks of many species seemed very common in the open country of Siam, but as at the time of my visit these areas were flooded, and under rice almost ripe for harvesting, we found it practically impossible to obtain specimens.

ASIONIDÆ.

† 21. *Scops bakkamœna lempiji* Horsf.

Otus bakkamœna lempiji Hartert, Vögel pal. Fauna, ii. 1913, p. 974.

1 ♂ ad. Koh Mesan, off Cape Liant, S.E. Siam. Nov. 1916.

Iris dark; bill pale yellowish-grey; feet pale brownish-yellow.

T. L. 215; W. 153.

This is a rather dull-coloured example; the feathering of the tarsi does not extend to the toes, and the fifth quill of the wing is slightly the longest. It is perhaps somewhat intermediate between the Javanese race and *S. b. lettia* of Nepal.

† 22. *Ninox scutulata burmanica* Hume.

Ninox burmanica Hume, Stray Feathers, iv. 1876, p. 285; Hume & Davison, *op. cit.* vi. 1878, p. 40.

1 ♀ ad. Koh Kram, Inner Gulf of Siam. Oct. 1916.

Iris deep yellow; maxilla black; cere, culmen, and tip olive-yellow; mandible olive-yellow and black; feet deep yellow.

T. L. 305; W. 213.

This race from Pegu and Tenasserim was described as having the upper surface much darker than *N. s. lugubris* of northern India, but not so dark as the bird inhabiting

Malacca, Singapore, and Sumatra. I have compared my specimen and an unsexed skin from Bangkok (coll. H.R.H. Prince Chumporn) with birds from the Malay States, Singapore, and the Rhio Archipelago, and find that the upper parts of the Siamese birds are a less rich brown, being paler and duller on back and wings, and that the heads are paler and greyer.

I find that two forms occur in the Malayan localities mentioned :—(1) a smaller bird with richly-coloured underparts, having the wing in males (6 examples) 183–193, females (3 examples) 186–198 mm.; and (2) a larger race with the brown element less extensive below, and having wings in males (3 specimens) 210–216 mm. and females (2 specimens) 218 mm. The larger birds were obtained in the winter months on the mountains of the Malay States and on Pulau Jarak, an islet in the middle of the Straits of Malacca, and are probably examples of *N. s. scutulata* Raffles [*N. s. japonica* (Temm. & Schleg.)].

Both subspecies are similar in colour above; but in the smaller the brown markings on the flanks are broader and more bar-like, whereas in the larger they more nearly approach longitudinal streaks: these are the distinguishing characters recorded by Grant ('Ibis,' 1896, p. 111) for the Indian *N. scutulata* and *N. japonica* (T. & S.).

The Siamese birds have the lighter underparts of the larger race, but the flank-markings are intermediate in shape.

† 23. *Glaucidium cuculoides* (Vigors).

Athene cuculoides bruegeli Parrot, Verh. Orn. Gesellsch. Bayern, viii. 1911, p. 97.

1 ♀ ad. Lat Bua Kao.

1 ♀ ad. Koh Lak.

Iris lemon-yellow; edge of eyelid black; bill pale olive-green or olive-yellow, with tip and culmen yellow; feet pale olive-green or olive-yellow.

T. L. 235, 222; W. 148, 146.

Parrot's paper containing the description of *G. c. bruegeli*

is not available, so I have recorded my examples under the specific name.

† 24. *Bubo coromandus klossi* Robinson.

Robinson, Journ. Fed. Malay States Mus. iv. 1911, p. 247.

1 ♂ ad., 1 ♀ ad. Koh Lak.

Iris deep yellow; bill pale blue-grey; feet plumbeous-grey.

Male: T. L. 540; W. 380; B. f. g. 43.

Female: T. L. 545; W. 395; B. f. g. 46*.

I have compared this pair with the type, which came from northern Perak, Malay States, and find that they are even slightly darker and duller than that individual.

PSITTACIDÆ.

† 25. *Palæornis fasciata* (P. L. S. Müll.).

1 ♀. Lat Bua Kao.

Iris pale yellow; orbital skin brownish-black; bill horny-brown; feet yellowish-black.

T. L. 337; W. 153; bill from cere 23; height at base 12.3.

Somehow we were unsuccessful with Parrots, and did not meet with any examples of the large Red-shouldered Paroquet, which also occurs at Lat Bua Kao, and which, on material lent me by Mr. W. J. F. Williamson, I have recently named *Palæornis eupatria siamensis* (Journ. Nat. Hist. Soc. Siam, ii. 1917, p. 219).

† 26. *Palæornis rosa* (Bodd.).

2 ♂, 1 ♀. Koh Lak.

Males. Iris pale yellow; cere black; maxilla yellow with orange base and black tip; mandible black with yellow base, or yellow streaked with black; feet dull olive.

Female. Iris yellowish-white; cere black; maxilla yellow

* As in the type, where this measurement was given by some error as 1.55 inches (=39.5 mm.).

with horny tip; mandible black with greenish base; feet olive-grey.

Males: T. L. 302, 297; W. 132, 133; bill from cere 17, 17, height 9.5, 9.2.

Female: T. L. 235; W. 123; bill from cere 16, height 9.

Not previously recorded in this area from further south than Tavoy. It extends eastwards to the Mekong.

CORACIIDÆ.

+ 27. *Coracias affinis* McClell.

Coracias affinis theresiæ Parrot, Verh. Orn. Gesellsch. Bayern, viii. 1911, p. 97.

1 ♂. Lat Bua Kao.

Iris brown; bill black; feet brown.

T. L. 335; W. 184.

This bird is often seen in Bangkok gardens in the winter season, but we met with very few while collecting.

While travelling from Koh Lak to Bangkok on Nov. 17 none were observed; but on my return to Koh Lak on the 21st, hundreds were seen perched on the telegraph-wires along the railway-line.

ALCEDINIDÆ.

+ 28. *Alcedo ispida bengalensis* Gm.

1 ♂, 1 ♀. Tachin, Central Siam. Oct. 1916.

1 ♂, 2 ♀. Koh Lak.

Iris dark; bill (males) black, gonys red, (females) maxilla black, mandible dull red washed with black; feet red washed with brown.

Males: T. L. —, 160; W. 70, 69; B. f. g. 45, 44.

Females: T. L. —, 170, 162; W. 70, 72, 71; B. f. g. 45, 47, 45.

+ 29. *Ceyx tridactyla* (Pall.).

1 ♀. Satahip, near Cape Liant, S.E. Siam. Nov. 1916.

1 ♀. Koh Mesan, off " " "

Iris dark; bill and feet orange to blood-red.

T. L. 136, 136; W. 57, 57.

† 30. *Halcyon smyrnensis fusca* (Bodd.).

Hartert, Nov. Zool. xvii. 1910, p. 215.

Halcyon perpulchra Madarász, Ann. Mus. Nat. Hungar.

ii. 1904, p. 85.

1 ♂. Tachin, Central Siam. Oct. 1916.

W. 113 ; B. f. g. 67.

† 31. *Halcyon chloris* (Bodd.).

Halcyon chloris, *H. armstrongi*, *H. humei* Sharpe, Cat. Birds Brit. Mus. xvii. pp. 272-3, 277, 281, pls. vii., viii. (1892).

1 ♀. Tachin, Central Siam. Oct. 1916.

W. 99 ; B. f. g. 55.

UPUPIDÆ.

† 32. *Upupa epops longirostris* Jerdon.

Birds of India, i. 1862, p. 393.

1 ♂, 1 ♀. Koh Lak.

Iris dark ; bill black with fleshy-brown base ; feet (male) brownish-black, (female) blackish-plumbeous.

Male : T. L. 310 ; T. 95 ; W. 137 ; B. f. g. 65.

Female : T. L. 295 ; T. 95 ; W. 130 ; B. f. g. 61.

Both these birds lack any white spot on the first primary, as do two Siamese specimens belonging to Mr. W. J. F. Williamson—a female from Bangkok (W. 130) and an immature male from Patani, peninsular Siam. It is absent in a female (W. 129) from the island of Koh Samui, Peninsular Siam ; while a male from the State of Trang, in the same area, has a spot on one of the first primaries only.

A series of birds from the Malay Peninsula (Bandon to Selangor, where a straggler has been taken) all have white spots on the first primaries, but agree in dimensions with my Siamese specimens—3 males : wings 132-137, bills from gape 65-68 mm. ; 6 females : wings 126-131, bills from gape 54-60 mm. Gyldenstolpe records females from eastern Siam and Koh Lak with wings of 131 mm. ; while a male of his from northern Siam has the wing of 140 mm.

It seems evident that no value attaches to the presence or absence of spots on the first primary. I have retained

Jerdon's name for these Indo-Chinese birds, though Hartert (Vögel pal. Fauna, p. 870) considers that *U. e. indica* Reichenbach extends through the whole of India (exclusive of the south, where *U. e. ceylonensis* Reichenbach occurs) to southern China and Hainan.

From Koh Lak Gyldenstolpe records a male with a wing of 146 mm., and Mr. Williamson informs me that he has two adult males from Bangkok and south-eastern Siam with wings of 115 and 152 mm. and white spots on first primaries. These birds are so large that they call for examination, particularly since there is in the F.M.S. Museums a female Hoopoe from Taiping, Perak, with wing of 147 and bill from gape 55 mm.; though much worn, it is undoubtedly an example of *U. e. saturata* Lonnberg, and provides by a great distance the most southerly record of the race. +

MEROPIDÆ.

+ 33. *Melittophagus leschenaulti swinhoei* (Hume).

2 ♀. Lat Bua Kao.

Iris crimson; bill and feet black.

T. L. 222, 215; W. 110, 102.

+ 34. *Merops viridis* (Linn.).

Merops sumatranus Raffles & auct. (*vide* Hartert, Nov. Zool. xvii. p. 482).

1 ♂ subad., 1 ♂ imm. Lat Bua Kao.

Iris crimson; bill and feet black.

W. 109, 114.

The young bird is green throughout except for the rump, tail, and under tail coverts which are blue, and the ear-coverts which are dusky black.

+ 35. *Merops lamark burmanus* Neumann.

Merops orientalis burmanus Neumann, Ornith. Monatsber. xvii. 1910, p. 80.

Merops viridis auct. (*vide* Hartert, Nov. Zool. xvii. p. 482).

1 ♀. Lat Bua Kao.

3 ♂, 2 ♀. Koh Lak.

Iris crimson; bill and feet black.

Males : W. 96, 94, 94.

Females : W. 91*, 91, 89*.

In adults the top of the head and hind-neck are brilliant ferruginous, and the whole of the plumage is suffused with a coppery sheen.

Owing to the recent discovery by Dr. Hartert that the bird so long known as *M. sumatranus* is the one described by Linnæus much earlier under the name of *M. viridis*, the latter has to replace *M. sumatranus* Raffles, and we have got to employ a fresh specific name for the present bird. The earliest available is *Merops lamark* Cuvier, applicable to examples from Ceylon and Bengal, from which the Indo-Chinese form has been separated by Neumann as *burmanus*.

†36. *Merops philippinus* Linn.

1 ♀ subad. Koh Lak.

Iris crimson; bill and feet black.

T. L. 247; W. 126.

†37. *Nyctiornis athertoni* (Jard. & Selby).

1 ♂ ad. Lat Bua Kao.

Iris brown; bill black, base of lower mandible grey; feet olive.

T. L. 350; W. 142; T. 129; B. f. g. 55.

CAPRIMULGIDÆ.

†38. *Caprimulgus macrurus ambiguus* Hartert.

Hartert, Ibis, 1896, p. 373.

1 ♀ ad. Koh Lak.

T. L. 277; W. 189.

In his "Synopsis of the Races of the Long-tailed Goat-sucker" (Proc. U.S. Nat. Mus. vol. xlviii. 1915, pp. 589-599) Oberholser has resuscitated the name *bimaculatus* applied by Peale ('U.S. Exploring Expedition,' vol. viii., Mammals and Birds, p. 170) to a Malayan Nightjar, and has relegated *ambiguus* Hartert to its synonymy. According to him, the type of *C. m. bimaculatus* came from the Settlement of Malacca, and all Peninsular and more northern birds agree

* Subadult.

with it, while those from Singapore together with Sumatra differ.

The type-locality of *bimaculatus*, however, is not Malacca in a restricted sense, but Singapore. Peale based this name on a bird "obtained at Singapore" (*l. c. s.*), and, later, stated that the species occurred in Malacca (*t. c. s.* p. 208). As every zoologist who deals with eastern material should know, the name Malacca was almost universally used by writers of English in the first half of the last century—especially by those who did not reside in the East—in the same way as the Dutch and other continental authors use it to-day, *i. e.*, the greater portion of the Malay Peninsula; and this is obviously what Peale meant when he stated, first, that *bimaculatus* was "obtained at Singapore," and, afterwards, that it came from "Malacca": not that it came from "Malacca, Malay Peninsula," as Oberholser would have us believe—a very different thing. Furthermore, a reference to the narrative of the U.S. Exploring Expedition shows that Malacca was not visited, Singapore being the only place of this region at which a call was made.

Oberholser is of opinion that two Malayan forms of *macrurus* are recognizable: one occurring in the Malay Peninsula, and also in Indo-China, which he argues is *C. m. bimaculatus* Peale (*C. m. ambiguus* Hartert being synonymous), and a second, found in Singapore and also Sumatra, to which he has given the name *anamesus*, Singapore being the typical locality (*t. c. s.* p. 593).

These two forms are said to differ in size alone, the smaller with a wing of 189 mm. and less (average 185.8*) occurring in the south, and the larger with a wing of 190 mm. and more (average 193.5*) being found in the north. This difference in dimensions is scarcely to be realised by an inspection of the series I have examined—a series considerably larger than that at Mr. Oberholser's disposal; but, admitting for the moment the correctness of his perceptions, Singapore and Sumatran birds will have to bear the name *bimaculatus* (*anamesus* ranking as a pure

* *Vide* measurements, Oberholser, *t. c. s.* pp. 594, 596.

synonym), leaving available for the northern form the name *ambiguus* given by Hartert to birds from the Malay Peninsula, Burma, Assam, and the Eastern Himalayas. (The first-named place must be regarded as the typical locality; but it is a rather comprehensive term, and as I suspect Hartert meant by it all the country south of about lat. 13° N., I would restrict it for the sake of greater preciseness to the southern part of Tenasserim.)

I have before me a series of birds ranging through the Malay Peninsula from Siam to Singapore, and their wing-measurements are so variable that it seems impossible to strike a difference between northern and southern examples in this respect :—

Koh Lak, S.W. Siam.....	189.
Trang, Peninsular Siam.....	194, 190, 186, 186.
Langkawi Id., Kedah.....	194.
Trengannu, Malay States	177 (apparently adult).
Penang Id.	187.
Pahang, Malay States.....	193.
Perak, „ „	193, 180.
Selangor, „ „	196, 193, 193, 193, 191, 190, 190, 189, 188, 187, 185, 185.
Singapore Id.	181, 188, 186.

It will be seen that Singapore examples are no smaller than several more northern birds; and it remains to be shown if an equal series from that island will include longer-winged examples or not.

On laying the series out from north to south one gets the impression, however, that the buffy markings on the back and wings of southern birds are of a deeper, richer tint than is the case with northern specimens: this is not always so with individuals, but one seems to see a difference, though very slight, with series. The point where change takes place is about the latitude of Penang, and so I suggest that birds from the south of this, including Sumatra, should be known as *bimaculatus*, while northern birds should be called *ambiguus*. Of course, if this distinction prove fallacious and a difference cannot be established, all should stand as *bimaculatus* Peale.

†39. *Caprimulgus asiaticus* Lath.

2 ♂ ad. Koh Lak.

Iris dark; bill brownish, tip black; feet fleshy-brown.

T. L. 225, —; W. 144, 148.

TROGONIDÆ.

†40. *Pyrotrogon oreskios* (Temm.).

1 ♀. Lat Bua Kao.

Orbital skin slaty-blue; bill slaty-grey, tip black; feet slaty-grey.

T. L. 290; W. 115; B. f. g. 22.

CUCULIDÆ.

†41. *Surniculus lugubris dicruroides* Hodgs.

Stresemann, Nov. Zool. xx. 1913, p. 341.

1 ♀. Koh Lak.

Bill black; feet plumbeous, soles dull white.

T. L. 250; T. 125; W. 133*; B. f. g. 27.

Stresemann, who has examined a large series of the Black Cuckoo, is of opinion that two subspecies must be recognized in Continental Asia—a large form, *S. l. dicruroides* (typical locality, Nepal: wing 136–148, average about 141 mm.), and a smaller race, *S. l. brachyurus* (typical locality, Pahang, Malay States: wing 117–139, average about 123 mm.). Both differ from the true *lugubris* of Java, Bali, and Ceylon (in which the wing ranges between 122 and 131) in having the middle tail-feathers longer, instead of shorter, than the wing. The former possibly ranges eastward as far as Hainan; the latter is said to occur also in Sumatra and Borneo.

I have measured nine adult birds from the Malay Peninsula (no white spots on the body), and I find their wings are as follows:—138, 137, 135, 135, 131, 127, 121, 118, 118. These dimensions are within the range given for *brachyurus*; but there is also a specimen obtained on the mountains in February with a wing of 145 mm. (almost the extreme of

* The wing-measurements of other Siamese birds are 135, 135, 138 mm.

dicruroides), which may represent a winter visitor from the north. The presence of such birds in the Peninsula, where, again, they may be high-level residents, may have unduly raised the range for *brachyurus*. The birds of southern Burma and Siam are intermediate; but as there does not seem any necessity for recognizing them as a race, I would place them under *dicruroides*, to which they seem to come nearest.

† 42. *Cacomantis merulinus querulus* Hume.

Stresemann, Nov. Zool. xix. 1912, p. 332.

1 ♀. Koh Lak.

Iris red-brown; bill black, base of mandible brown; feet yellow washed with olive-brown.

T. L. 220; W. 108; B. f. g. 21.

As the result of his investigations of the Cuckoos of this species, Stresemann considered that the present dark-bellied form was Indo-Chinese, while the home of the true *merulinus* was the Malayan and Philippine areas. I find, however, that both races occur in the Malay Peninsula, whence we have adult specimens of *C. m. querulus* taken in July, August, September, and December, with wings 103, 103, 106, 107 mm.

Stresemann, who regards the *merulinus* of Java as not distinguishable from the typical bird of the Philippines, considers that the *merulinus* of the Malay Peninsula is intermediate between *C. m. merulinus* and *C. m. querulus*. It is indeed intermediate in colour between the yellow-bellied Javan and Bornean birds and the rufous-bellied northern *querulus*, but it is quite constant; therefore I see no reason why the name of *threnodes*, applied to it by Cabanis and Heine, should not stand. The wing-lengths of adult Peninsular birds, in a series I have examined, are:—95, 97, 97, 98, 98, 99, 100, 104 mm.

Cacomantis sepulchralis (S. Müll.) also occurs in the Malay Peninsula, though unrecognized there by Stresemann (*t. c. s.* pp. 332, 334). I find that the wings of adult examples measure 107, 108, 113, 114 mm., and I am inclined to attribute to this species or race all banded birds obtained

in the Peninsula, though the bars (which are rufescent) on the inner webs of the tail-feathers extend to the quill.

†43. *Eudynamis orientalis malayana* Cabanis.

1 ♂. Tachin, Central Siam. Oct. 1916.

1 ♀. Lat Bua Kao.

Female. Iris crimson; maxilla greenish-horny; mandible pale dull greenish; feet plumbeous-horn.

Male: T. L. —; T. 187; W. 203; Ta. 34; B. f. g. 37.

Female: T. L. 440; T. 213; W. 222; Ta. 35; B. f. g. 37.5.

These two birds are larger than the Indian form, *E. o. honorata*, and the female has the top of the head rufescent, while by far the greater number of the pale markings on the upper parts are also rufescent; the under parts are black and buff.

I am indebted to Mr. W. J. F. Williamson for the information that the wings of birds in his collection from central and eastern Siam range between 203 and 221 mm. in the case of adult males and 198 and 215 mm. in females.

The first race geographically adjoining *honorata* to be separated on account of larger size was *malayana* Cabanis, of Sumatra, which Hartert, in his "Notes on the Genus *Eudynamis*" (Nov. Zool. x. 1903, p. 235) considers to extend north to Tenasserim.

Ingram has recently described from Hainan, on account of its slightly smaller size, a pale form like *E. o. honorata*, under the name of *E. o. harterti* (Nov. Zool. xix. 1912, p. 279). Before this name is further used, however, Hainan birds should be compared with specimens from Canton, since to birds of this locality the name *chinensis* has been given by Cabanis and Heine (Mus. Hein. iv. 1862, p. 52, note).

†44. *Centropus sinensis intermedius* Hume.

1 ♂. Koh Si Chang, Inner Gulf of Siam. Jan. 1915.

1 ♂, 1 ♀. Koh Lan, " " Oct. 1916.

1 ♂. Koh Lak.

Iris crimson; bill and feet black.

Males: T. L. 500, —, 510; W. 197, 189, 194; B. f. g. 44, 43, 43.

Females: T. L. 515; W. 199; B. f. g. 45.

+ 45. *Rhopodytes tristis hainanus* Hartert.

Nov. Zool. xviii. 1910, p. 218.

2 ♂, 1 ♀. Lat Bua Kao.

1 ♂. Koh Lak.

Iris brown; orbital skin deep crimson; bill apple-green; feet plumbeous.

Males: T. L. 585, 510, 575; W. 157, 152, 153.

Female: T. L. 505; W. 145.

CAPITONIDÆ.

+ 46. *Thereiceryx lineatus* (Vieill.).

2 ♂, 1 ♀. Lat Bua Kao.

Iris brown; orbital skin deep yellow; bill fleshy; feet yellow.

T. L. 270, 275, 275; W. 115, 126, 131; B. f. g. 38, 41, 42.

These examples are intermediate between the true *lineatus* of Java and the large form *hodysoni* Bp. of Nepal.

I have an adult female from Chiangmai, northern Siam (coll. K. G. Gairdner), which agrees with these examples in colour and size (wing 126), but has a much longer bill, the length from gape being 46 mm.

+ 47. *Thereiceryx flavostrictus* (Temm.).

Bucco flavostrictus Temminck, Pl. Col. iii. 1831, p. 527.

Thereiceryx phæostriata, Robinson, Ibis, 1915, p. 737.

1 ♂ ad. Lat Bua Kao.

Iris red-brown; bill pale plumbeous, tip black; feet plumbeous-olive.

T. L. 247; T. 66; W. 108; Ta. 27; B. f. g. 38.5; culmen from frontal 30; exposed culmen 27.

T. flavostrictus was based on a specimen from Cochin-China (*vide* also Oustalet, Nouv. Archiv. du Mus. (iv.) i. p. 249). In Bull. B. O. C. xxiii. 1908, p. 31, Neumann pointed out the differences between northern and southern

birds, and, erroneously believing that the typical race came from the north, redescribed the smaller southern form under the name of *saigonensis*, which is a pure synonym of *flavostrictus*. The type of the latter is in the Leyden Museum, and its measurements are (*fide* Goffin, Mus. Pays-Bas, i. p. 37): bill 24.8; wing 112.8; tail 67.7; tarsus 22.5 mm.,—while the type of *saigonensis* from Saigon measures: culmen 26.5; wing 103; tail 58; tarsus 24.5.

The larger darker-headed northern form, ranging from southern China to Annam, is thus still without a name, and may be known as

THEREICERYX FLAVOSTRICTUS PRÆTERMISSUS, subsp. nov.

Typical locality: Southern China. Extreme measurements recorded: culmen 30; wing 118, tail 80; tarsus 27.

As is to be expected, birds inhabiting a great part of Siam are intermediate between the two. The species is recorded by Gyldenstolpe in the extreme north-west, but in the south has not been met with west of the Menam.

†48. *Xantholæma hæmatocephala* (P. S. L. Müll.).

2 ♂. Lat Bua Kao.

Iris dark or brown; eyelids crimson; bill black; feet dull cerise, claws black.

T. L. 160, 170; W. 81, 84.

PICIDÆ.

49. *Gecinus canus hessei* (Gyldenstolpe).

Picus canus hessei Gyldenstolpe, Ornith. Monatsber. xxiv. 1916, p. 28; id. Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 317.

Picus canus occipitalis Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. l. No. 8, 1913, p. 47.

1 ♂, 2 ♀. Lat Bua Kao.

Iris crimson; bill black; feet grey.

T. L. 335, 333, 345; T. 103, 105, 105; W. 148, 148, 149; Ta. 31.5, 31, 31; B. f. g. 46, 49, 43.

Gyldenstolpe's statement (second reference quoted) that this race is smaller than *G. c. occipitalis* is an obvious slip.

Hargitt ('Ibis,' 1888, p. 10) has pointed out that Burmese specimens exceed in measurement those from Sikkim and Cachar; and I have seen a male from Sikkim with a wing of 139 mm. only, against the 155 mm. which Siamese birds are known to attain.

My specimens, though not otherwise paler above than the Sikkim example, have the wings more markedly bronze-olive and the underparts greener and less olive; the females differ from the male in having the entire top of the head grey striped with black, in lacking the black lores and frontal feathers, and in having the black malar stripe much reduced.

Adjacent races are *G. c. tancelo* Gould of Formosa and southern China, *G. c. hainanus* Grant of Hainan, and *G. c. robinsoni* Grant of the Malay States.

† 50. *Gecinus erythropygus* Elliot.

Nouv. Archiv. Mus. Paris, Bull. 1865, i. p. 76, pl. iii.

1 ♂, 1 ♀. Lat Bua Kao.

Iris lemon-yellow; eyelids black; bill olive-yellow, tip horny; feet plumbeous.

Bill from gape—male, 37; female, 35·5.

Described from lower Cochin-China, this Woodpecker seems to extend westward a little beyond Korat in eastern Siam, where it has been met with by Gyldenstolpe as well. In northern Siam it is replaced by *G. e. nigrigenis* Hume, a very distinct subspecies and far handsomer bird.

As this is a rare bird in collections, I have put together the following measurements:—

		T. L.	T.	W.	Ta.	Culmen.	
Lower Cochin-China.	♀.	279	111	140	29·5	29·5 *	fide Elliot (type).
	♂.	317	114	161	31	40	} fide Hargitt.
North Cambodia and Laos.	♀.	292	109	159	29	34	
	♂.	275	122	153	—	33	} fide Gyldenstolpe.
Eastern Siam, near Korat.	♂.	322	105	151	27	31·0 †, 34·5 †	
	♀.	315	105	150	28·5	31·5 †, 35·5 †	} mihi.
	♂.	294	77	140	28	29·5 †, 34·0 †	
	♀.	315	108	150	29	31·0 †, 34·5 †	} B. f. g. 35 (subadult). " 36.

* "Bill from front." † Exposed portion of culmen. ‡ Culmen from base of frontal.

(There is a considerable range in the length of the culmen, which may be due to different methods of measurement. It is a dimension about which some confusion probably exists: a measurement used by Tweeddale, viz. length of bill from nostril, was much more definite, but being taken on a reduced length had the disadvantage of making differences in size appear less obvious. The length of bill from gape seems to be best, as being that least capable of two interpretations and at the same time the greatest measurement that can be taken.)

The type from the extreme south of French Indo-China seems to have been an immature bird, as it is of practically the same size as the obviously subadult individual from Lat Bua Kao, which had, further, a very worn tail. The specimens from northern Cambodia and Laos are larger than the others, and it may be that there is a general increase in size in that direction.

† 51. *Gecinus vittatus eisenhoferi* (Gyldenstolpe).

Picus vittatus eisenhoferi Gyldenstolpe, Ornith. Monatsber. xxiv. 1916, p. 28; id. Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 88.

Gecinus vittatus Robinson, Ibis, 1915, p. 738.

1 ♂. Lat Bua Kao.

1 ♂. Koh Mesan off Cape Liant, S.E. Siam. Nov. 1916.

Iris brown or crimson; maxilla black or plumbeous-black; mandible olive or greenish-yellow, tip black; feet olive.

T. L. 296, 320; W. 140, 137; B. f. g. 38, 39.

The type, a female and only specimen obtained, was described as having the upper parts "bright grass-green instead of yellowish-olive; the rump-feathers fiercely tipped with yellow," and was perhaps an abnormally bright individual, for my examples confirm the character of greater size only (wing 142). It is interesting to note the increase in this respect as the species proceeds northwards:—

Java (a pair from the typical locality)	Wings 123-126
Malay States (Johore, Negri Sembilan, Selangor)..	„ 123-128
Langkawi Id., east coast Malay Peninsula	„ 128-135
South-east Siam (Klong Menao)	„ 137-137
East Siam (west of Korat)	„ 137-140
North Siam	„ 142

I have compared the Malay States birds with those from Java and cannot perceive any differences whatever. All the more northern birds having wings above, say, 135 mm., should, I think, be called *G. v. eisenhoferi*.

+ 52. *Gecinus viridanus* (Blyth).

Gecinus weberi Müll. Ornith. Ins. Salanga, 1882, p. 69.

1 ♂, 1 ♀. Koh Lak. 15, 16. xi. 1916

Iris crimson; orbital skin grey; maxilla black; mandible greenish-yellow with black tip; feet olive-green.

T. L. 305, 290; W. 137, 133.

This Woodpecker does not seem to extend southward beyond the latitude of Peninsular Siam, and five birds from the southern part of that area have wings ranging from 128 to 135 mm. A male from Tanjong Badak, southern Tenasserim, has the wing of the same size as the Koh Lak male, and a male and female from Mergui and the foot of Muleyit have wings of 132 and 130 mm. The typical locality of *G. viridanus* is Arakan.

+ 53. *Gecinus striolatus* (Blyth).

Picus striolatus Blyth, Journ. Asiat. Soc. Bengal, xii. 1843, p. 1000. "Himalayas and Central India." Typical locality restricted, Himalayas.

1 ♂ ad. Koh Lak.

Iris, inner ring crimson, outer white; maxilla horny brown; mandible dull yellow, tip brownish; feet olive.

T. L. 265; T. 83; W. 127; Ta. 23; B. f. g. 33.

The Indian Museum, Calcutta, has a pair of this bird from "Burma" with wings of 129 mm., but it seems to attain a considerably larger size, as Oates gives the wing-length of Upper Pegu examples as ranging from 136 to 141

(‘Stray Feathers,’ iii. p. 68), and Scully obtained a male in Nepal with a wing of 137 mm. According to Oustalet this Woodpecker extends to Cochin-China, and Anderson obtained it in Yunnan.

†54. *Gecinulus viridis* Blyth.

1 ♀ ad., 1 ♀ imm. Lat Bua Kao.

Iris brownish crimson, dark brown*; bill pale lavender, lavender-white*; feet olive.

T. L. 257, 237*; W. 127, 114*; B. f. g. 27, 26·5*.

This is probably only a rather marked southern subspecies of *G. grantia* (McClell.), which is known from Nepal to Assam, and again from French Laos (Attoupeu, east of Bassac, not Laos, northern Siam). Described originally from Tenasserim, it extends into Pegu and down the Malay Peninsula.

Malayan birds do not differ in size (wings of males 120–129, females 118–131), but, compared with my specimens, the females are rather darker below, *i. e.*, more brownish, less greenish, olive, and the white spots on the inner webs of the wing-feathers are smaller; the head also is slightly darker throughout and the broad yellowish nuchal collar absent, the crown and nape being practically concolorous. They may be known as

†*Gecinulus viridis robinsoni*, subsp. nov.

Typical locality: Mountains of the Selangor-Pahang Boundary, Malay States. Named after my colleague H. C. Robinson, who, by allowing one of his collectors to engage with me during my vacation in Siam, helped to considerably increase the results of my visit.

†55. *Brachylophus chlorolophus chlorolophoides* Gyldenstolpe.

Brachylophus chlorolophoides Gyldenstolpe, Orn. Monats. xxiv. 1916, p. 29; id. Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 90, pl. 2. fig. 2.

1 ♀. Lat Bua Kao.

* Immature female.

Iris crimson; eyelids black; maxilla black; mandible greenish-yellow, tip black; feet dark olive.

T. L. 265; T. 90; W. 133; Ta. 21; B. f. g. 31; exposed culmen 24.

I am afraid that some confusion exists in regard to the way the Indo-Chinese representative of *B. chlorolophus* has been treated. Gyldenstolpe has recorded as typical, birds from northern Siam, and has also described from the same locality, under the name of *B. chlorolophoides*, a single male which, it is stated, "differs by the intensity of the red colour of the crown and nape" and other *relative* features. But *B. chlorolophus* does not possess a red crown as, by inference from the above quotation, Gyldenstolpe believes; and it seems very possible that the specimens he regards as *chlorolophus* are only somewhat less extreme examples, not specifically different from the individual he has named *chlorolophoides*. Like other races of *chlorolophus* (*longipennis* Hartert, from Hainan; *wrayi* Grant, from the Malay Peninsula; *chlorogaster* Jerdon, from Ceylon and S. India), it differs chiefly in having a considerably greater amount of red on the crown and occiput. Hartert (Nov. Zool. xvii. p. 222) was not certain that the five males on which he founded his subspecies were really adult—two had no red malar stripe, and in the other three it was indicated by some red spots only, the crown was "red with some large green patches; it is impossible to say if the crown would ever become quite red." *B. chlorolophoides*, of the same size, seems only doubtfully distinct in having the occiput red, the basal part of the crown-feathers greenish-grey broadly tipped with red; and a broad malar stripe red faintly barred with dusky olive, the feathers having grey bases.

My specimen differs from a female from Manipur only in having the nuchal crest paler yellow, the outer webs of the primaries unspotted and the primaries and secondaries much more extensively coloured with deeper red, the rectrices more edged with golden olive; while the throat and breast are greener olive.

+ 56. *Micropternus brachyurus williamsoni*, subsp. nov.

1 ♂ ad. Koh Lak, S.W. Siam. 10 Nov. 1916.

Iris dark; bill plumbeous-black; feet brownish-black.

T. L. 230; T. 62; W. 112; Ta. 21; B. f. g. 26.5.

Differs from the form inhabiting the Malay Peninsula south of Lat. 9° N. (which if distinct from the Javan bird will have to be known as *M. b. squamigularis* Sundevall*) in having the dark median area of the chin and throat-feathers much narrower with no pale shaft-line, and their pale edges broader; rather darker breast; dark bars on the tail (five and a black tip), though reaching the shafts yet much narrower (2 mm. above and 1 mm. below, against 3 mm. or more above and below), and also narrower dark bars on the back and wings. Size about the same, as the Malayan birds vary in wing-length between 102 and 114 mm.; the larger wings occurring in the south as well as in the north of their area.

M. b. phaiiceps differs in having the shafts of the wing and tail-feathers clear brown, not barred with black; while *M. b. fokiensis* of eastern China and *M. b. holroydi* of Hainan have the plumage dark brown above narrowly barred with rufous.

Where my own material has been meagre Mr. W. J. F. Williamson has, in a number of instances, lent me additional specimens from his own collection, and I have much pleasure in naming this Woodpecker after him in recognition of this assistance.

All forms of *Micropternus* are, as Hartert has noted (Nov. Zool. xvii. p. 221), only subspecies of *brachyurus*. In dealing with continental birds—exclusive of the dark brown rufous-barred races of southern China, and perhaps Tonkin and northern Laos—it seems simplest to place them in two sections:—(1) the *brachyurus* group with the shafts of the wing-feathers barred or otherwise blackened, and (2) the *phaiiceps* group, in which the wing-shafts are perfectly unsullied. All the southern forms belong to the first

* Consp. Av. Pic. 1866, p. 89 (ex Malacca).

section : those which have been recognized are *brachyurus* (or *squamigularis*) of the Malay Peninsula, *williamsoni* of south-western Siam, and *gularis* of southern India.

The Ceylon bird, while otherwise resembling *gularis*, differs in its darker colour, which is nearer bay. It may be known as

***Micropternus brachyurus lanka*, subsp. nov.**

Further I find that some birds in the Indian Museum from Cuttack, Calcutta, and "Bengal" have the darkened wing-shafts of *gularis*, but lack the notably dark throat-feathers of that race which are pale-edged near the apices only : they are thus intermediate between *phaiiceps* and *gularis*, but belong to the *brachyurus* group on account of their darkened wing-shafts. I would call them

***Micropternus brachyurus mesos*, subsp. nov.**

The *phaiiceps* group is less easily disposed of, owing to the fact that the several names proposed have distributions attached which overlap. These names are :—

Micropternus phaiiceps Blyth, Journ. Asiat. Soc. Bengal, xiv. 1845, p. 195. "India proper extending eastward to Tipperah and Arakan." Subsequently (*t. c.* p. 551) this bird was stated to occur in "Bengal, Nepal, Assam, and Arakan," so that Bengal should be regarded as the typical locality. *Picus rufinotus* Bp. (Consp. Av. i. 1850, p. 113) is said to have come from Central Asia, but the type, which is in the British Museum, is labelled "Bengal"; thus *rufinotus* is probably rightly placed as a synonym of *phaiiceps*.

Phaiopicus blythii Malh. Rev. et Mag. Zool. 1849, p. 534. "Himalayas, Arakan, Tenasserim, and Nepal." As Hume says that birds from Sikkin are much larger than those of the plains ('Stray Feathers,' v. 1877, p. 479), and I find the same to be the case with specimens from Khatmandu, Nepal, this name is available for the race of the eastern Himalayas.

Micropternus burmanicus Hume, Proc. Asiat. Soc. Bengal, 1872, p. 70. "Thayetmyo, North Pegu." This name will serve at present for Burmese birds which are not *phaiiceps* (s. s.). The race was said to be most nearly allied to

phaiiceps, but to have the head less brown, the pale margins of the throat-feathers broader and more conspicuous, and to be brighter and larger; a specimen from Chiangmai, northern Siam, agrees. All birds I have seen from Indo-China (Assam to Siam north of the Malay Peninsula) are of *phaiiceps* section, having the wing-shafts unblackened.

One more race of *Micropternus* may well be distinguished: of it Hume writes (*loc. cit. supra*), "When you go towards the extreme western limits of the species in the Kumaon Bhabur, northern Rohilkund, the Dhoon, etc., you come upon a huge race almost more distinct from *phaiiceps* than the latter is from *brachyurus*."

"It is characterized not only by its size but by the almost entire absence of infuscation on the head, and by the fact that the adults are not only absolutely immaculate *below*, but also lose all markings on the upper surface, on the back, scapulars, and rump, which, coupled with the bright chestnut of their plumage, gives them a very different appearance from all the other races of *phaiiceps*."

For this race I suggest the name

Micropternus brachyurus humei, subsp. nov.

+ 57. *Tiga javanensis intermedia* Blyth.

Tiga intermedia Blyth, Journ. Asiat. Soc. Bengal, xiv. 1845, p. 193.

Tiga javanensis intermedia Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 95.

1 ♀. Lat Bua Kao.

1 ♂, 1 ♀. Koh Lak.

Iris dark brown or crimson; eyelids black; bill black, gonyes and proximal half of mandible pale plumbeous; feet olive or plumbeous-olive.

T. L. 280, 275, 265; W. 145, 142, 138; B. f. g. 34, 33, 33.

In a series of twenty adult examples of *T. javanensis* from the Malay Peninsula, south of Lat. 10° N., the wing-length varies from 125 to 136 mm. Three specimens from southern Johore and one from Bintang I., Rhio Archipelago, have

the entire under surface and sides of the head strongly suffused with ochraceous-tawny, but this occurs not infrequently in others of the series from farther north; this feature is quite lacking in all my Siamese birds, which, like the majority of the Malayan, are only faintly tinged with brownish below.

T. j. javanensis Ljung was based on Javanese material, but Gyldenstolpe (*l. c. s.*) erroneously states that Javanese birds are *intermedia* and that Malayan and Sumatran birds represent the typical form. His specimens of *intermedia* from northern Siam have wings varying from 139 to 154 mm.

Blyth, in describing this race, stated that it ranged from Nepal to Tenasserim, but he does not seem to have very clearly distinguished it from *T. shorei*.

+ 58. *Callolophus mineatus perlutus*, subsp. nov.

Callolophus malaccensis Hume & Davison, Stray Feathers, vi. 1878, p. 140.

Chrysophlegma miniatum malaccense Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 91.

10. Koh Lak, S.W. Siam. 15 Nov. 1916.

Iris crimson; maxilla black; mandible greyish-white; feet olive.

T. L. 265; T. 81; W. 137; Ta. 23; B. f. g. 34.5.

Larger than *C. m. malaccensis*; the breast and abdomen paler, the ground-colour being less tinged with brown and the dark bands narrower and farther apart; the yellow nuchal crest without any spots or bars of brownish.

+ 59. *Chrysophlegma flavinucha lylei*, subsp. nov.

1 ♂ ad. Koh Lak, S.W. Siam. 15 Nov. 1916.

Iris crimson; orbital skin bright olive; bill pale grey, tip whitish; feet olive.

T. L. 320; T. 96; W. 158; Ta. 31; B. f. g. 44.3; culmen to frontal 43; exposed culmen 38.

Smaller than *C. f. flavinucha* Gould, of the Himalaya (the wing of which attains a length of 173 mm. or more); throat paler: a few white feathers on the loreal region as in

C. f. wrayi Sharpe, from the mountains of the Malay States ; in *C. f. flavinucha* the lores are well clad with feathers concolorous with the forehead.

This form differs from *C. f. pierrei* Oust. (specimens from Lat Bua Kao, E. Siam) in the paler bill and in the nearly black, instead of brown, centres to the feathers of the fore-neck ; it also has the sides of the head, neck, forehead, and crown rather darker.

From *C. f. wrayi* Sharpe it is separated by larger size ; more white on the feathers of the fore-neck, the black of which is not continued in two lines to the base of the mandible to form distinct yellow chin and malar patches ; much paler under surface ; larger yellow nuchal crest and paler bill, that of *wrayi* being slate-coloured.

I have not seen *C. f. ricketti* Stryan, of Fokien, S. China, nor *C. f. styani* Grant, of Hainan, but (*vide* Grant, 'Ibis,' 1899, p. 588 ; Bonhote, P. Z. S. 1901, p. 71) both have dark chins and almost white malar patches ; the former is as large as *C. f. flavinucha*, while the latter is of the size of *wrayi*, but has the largest bill of all.

I have compared *C. f. lylei* with examples of *flavinucha* from Darjeeling lent to me by the Indian Museum, together with a male bird from "Burma" (coll. Dr. Williams), which differs from them in having the white of the fore-neck confined to the extreme bases of the feathers and entirely concealed by the long black ends.

This Woodpecker is named in honour of Mr. T. H. Lyle, H.B.M. Consul at Bangkok, and once an enthusiastic collector of mammals, in recognition of the assistance and courtesy received from him during my two visits to Siam.

† 60. *Chrysocolaptes strictus gutticristatus* (Tickell).

Chrysocolaptes gutticristatus indomalayicus Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. l. No. 8, 1913, p. 49.

Chrysocolaptes gutticristatus gutticristatus Gyldenstolpe, *op. cit.* lvi. No. 2, 1916, p. 95.

3 ♂, 1 ♂. Lat Bua Kao.

Iris yellow or pinkish-yellow ; eyelids black ; bill blackish,

mandible sometimes paler or greenish; feet dark olive or plumbeous-olive, soles dirty yellow.

T. L. 322, 320, 310, 315; W. 165, 167, 165, 166; B. f. g. 51, 56, 53, 50.

Gyldenstolpe, who collected this species on both his visits to Siam, first identified a female from eastern Siam (wing 159) and other birds from northern Siam (wings 156–159) as *indomalayicus* Hesse, and later recorded other specimens from the latter locality (wings 161–168) as true *gutticristatus*, the typical locality of which is Chota Nagpur.

The typical locality of *indomalayicus* is the island of Salanga or Junk-Ceylon, near the west coast of the Malay Peninsula, whence Hume and Davison record males with wing-lengths of 156 and 160 mm., “bills from front” 46 and 50 mm. I have examined a series from the Malay Peninsula and Lang Kawi Id., and find that the wings measure from 148 to 157 mm.

Large birds from the Himalaya with wings of 170–190 mm. (and also from the Daffa Hills, Assam, whence the Indian Museum has a female with wings of 175) are *sultaneus* Hodgk.; while the southern Indian form, *delesserti* Blyth, has wings of about 147–155 (*vide* Hume, ‘Stray Feathers,’ iii. p. 64). The first continental bird to be described, *gutticristatus* Tickell, is scarcely represented topo-typically in collections and no useful measurements have been recorded, which is most unfortunate, as all these races are merely dimensional ones.

In view of its position *gutticristatus* is probably intermediate in size between *sultaneus* and *delesserti*, and therefore has wings of 155–170 mm., in which case it is difficult to see how *indomalayicus* Hesse can be maintained, especially since birds from Tipperah, Arakan, Pegu, and Siam come exactly between the maximum and minimum of *delesserti* and *sultaneus* as given above. Until therefore we know more about *gutticristatus*, it seems to me that it would be best to ignore *indomalayicus* and regard *gutticristatus* as extending from Bengal through Burma and Siam into the Malay Peninsula as far as Lang Kawi Island.

In spite of assiduous collecting in the Malay States for many years, we have not succeeded in obtaining any specimens of *Chrysocolaptes* except on Lang Kawi Island and again in the extreme south, where it reappears once more after a gap of several hundred miles.

An adult male from Singapore Island has a wing of 143 mm., and another from the coast of Johore opposite measures in wing 146, while its bill is also considerably shorter than those of northern examples—in fact, these are altogether smaller birds, and on this account may be distinguished as

♂ *Chrysocolaptes strictus chersonesus*, subsp. nov.

I do not see how *Picus strictus* Horsfield, of Java, can be maintained as specifically distinct, so being the oldest name (Trans. Linn. Soc. xiii. 1822, p. 176) it must have preference over all others.

† 61. *Sasia ochracea reichenowi* Hesse.

Hesse, Ornith. Monatsber. xix. 1911, p. 181; Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 97.

1 ♀. Lat Bua Kao.

Iris blood-red; orbital skin crimson; maxilla black; mandible plumbeous; feet orange-red, soles yellow.

T. L. 87; T. 21; W. (to tip of 4th primary) 50; Ta. 12; B. f. G. 14.5.

Gyldenstolpe writes:—"The Rufous Piculet inhabiting Siam belongs to the form which Hesse has separated under the name of *S. o. reichenowi*. This subspecies also inhabits North Cachar, Burma, and Tenasserim. It is chiefly characterized by its being much brighter-coloured on the upper and under-parts of the body. Its size is also much smaller than typical *S. ochracea* Hodgs."

I have not seen Hesse's paper, but my female, as compared with a specimen from Sikkim, 6000 ft., and another from the Garo Hills, Assam (both unsexed), is paler above and below, more ochraceous, less rufous, and the head and wings are perhaps rather more olive. The wing is the same

size, but the tarsus and bill are a little longer ; the specimens lent to me by the Calcutta Museum having wings 50, 50 ; tarsus 13, 13 ; and B. f. g. 13, 14.5 ; and perhaps their deeper colour is due to their sex or age as specimens, the first having been collected in 1908 and the other by Dr. J. Anderson.

EURYLÆMIDÆ.

† 62. *Cymborhynchus macrorhynchus malaccensis* Salvad.

Cymborhynchus macrorhynchus Robinson, Ibis, 1916, p. 740.

Cymborhynchus macrorhynchus lemniscatus Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 87.

2 ♀ ad. Lat Bua Kao.

Iris emerald ; bill turquoise and yellow ; feet dark cobalt. T. L. 222, 225 ; W. 99, 100.

These specimens and others I have examined from Siam have broad oblique bars of white stretching from the quill to the edge of the inner web on the three outer tail-feathers, and represent Salvadori's *malaccensis* which seems sufficiently distinct on this account for recognition.

C. m. macrorhynchus (Gm.) came from Borneo, and the white tail-feathers are either absent or only faintly indicated by small spots on one or two of the feathers. Of *C. m. lemniscatus*, the type-locality of which may be taken as Bencoolen, Raffles wrote, "the tail is black" ; but specimens which I have seen from the west coast of Sumatra have both white-spotted tails and tails with scarcely any white on the feathers. All specimens, however, from the northern part of the range of this species seem to have markedly white-patched tails, and where the difference has become constant it should be recognized.

[To be continued.]

VI.—*The Platycercine Parrots of Australia: a Study in Colour-change.* By GREGORY M. MATHEWS.

(Plate III. and Text-figures 1, 2.)

THE Broad-tailed Parrots of Australia, ranged under the genera *Platycercus* and *Barnardius*, provide an interesting study in colour-evolution, and close investigation at some later period may lead to valuable conclusions as to the rate and reason of colour-changes. It was necessary to examine the group as a whole and also individually for my 'Birds of Australia,' and in that work I have proposed some theories to account for the facts. I propose to give a *résumé* of my remarks in this place, as this Journal will circulate among a larger and more varied number of readers. I hope that the matter here provided may interest, and perhaps suggest similar criticism of other groups. By means of the co-operation and consideration of independent ideas we may be able to determine some of the factors in bird-evolution, but the complexity of these factors is well shown in the present subject.

In the first place, the Broad-tails are divisible by means of colour-pattern into two genera, *Platycercus* and *Barnardius*. By acceptance of structural characters alone the two are inadmissible. I hope to prove that the former solution agrees best with the facts. The first genus, *Platycercus*, is characterized by having the feathers of the back bicoloured, a broad edging giving the well-known scalloped appearance to that feature. The species of the second genus, *Barnardius*, have the feathers of the back unicoloured. As the young of the first genus show the scalloping to a greater or less extent, it is obviously an ancient feature. As it is missing in the immature of the second genus, we have two stocks divergent at an early period of their existence, though at the present time their structural characters are to all intents identical. Newer and more accurate modes of examination may perhaps discount this last statement.

In the genus *Platycercus* I admit seven species, and in

the genus *Barnardius* I recognize two. Other workers have acknowledged many more species; but I regard these forms as subspecies only, my most recent criticism recording between twenty-five and thirty subspecific forms. Before I undertake the consideration of these I would remark upon some remarkable features of the members of the genus *Platycercus*. Though the species are now well established, and in many cases the subspecies are also fixed, there is a peculiar plasticity seen in the group—albinos, aberration, and hybrids constantly occurring. Further, there has been recorded, more than once, what is apparently dimorphism in the immature stage: that is, the immature taking on the adult plumage in the nest, though the immature plumage is different from that of the adult.

The whole group is confined to Australia, no member ranging into New Guinea or the islands to the north, nor are the species represented there by any form at all comparable.

Two species of the genus *Platycercus* occur in Tasmania, and these well merit special consideration, as one is the least developed and the other the most developed, as regards coloration as distinct from colour-pattern. It might be further noticed that in the extreme south-west a species has developed from the *Barnardius* group a structural feature which long ago claimed generic rank (*Purpureicephalus*), and this will be dealt with towards the end of these remarks.

As we have here a peculiar well-marked group isolated in Australia, we are given factors which are not interfered with by extra-limital and unknown complications. Some workers have in other Continents ranked as subspecies forms which were really representative species. In many cases the difference between a subspecies and a representative species is difficult to determine, and a great deal is left to the personal equation. In the peculiar case now before us, I can show that while we have species representing each other we have also subspecies, and in this instance these are well-marked groups of different value.

In the genus *Platycercus* I admit seven species, viz.: *caledonicus*, *elegans*, *flaveolus*, *icterotis*, *adscitus*, *venustus*, and *eximius* (see Pl. III.). While the first six are more

or less representative species, the seventh, *eximius*, ranges coincidently with *elegans* and *caledonicus*. The ranges of *flaveolus* and *elegans* overlap (see Text-figure 1), as do the ranges of *elegans* and *adscitus*, the *flaveolus* in the southern limits of the range of *elegans*, the *adscitus* in the northern

Text-figure 1.



Diagrammatic map of Australia and Tasmania to show the distribution of the Platycercine Parrots.

extent, but in each case *elegans* strongly survives well into the territory of the other species.

The two species of the genus *Barnardius* cover the southern part of the Continent, being purely representative species scarcely above the rank of subspecies, as will be shown later. The eastern representative does not range into Tasmania.

From a consideration of all the plumage-changes of the

species it is deduced that the ancestral coloration was an unmottled green. The nearest approach to this coloration is seen in the species *caledonicus*, which in the immature has the greater part of the plumage of that colour. To follow the explanation hereafter, it had better be recorded that there is a distinct cheek-patch which is usually blue, in some cases blue and white, in others white, and in one case yellow. This is an easy feature to group the species by, and we can note its direct evolution from a non-differentiated cheek, as the immature of *caledonicus* shows this cheek-patch of quite an undecided blue, partly greenish. The most highly developed species, *eximius*, has a white cheek-patch distinct in the young. The yellow-cheeked species is a peculiar one in many respects, showing plasticity and variable adult coloration. It appears to be developing in two phases under the stresses of different western environments from an all-green immature similar to that of *caledonicus*. We may conclude that the yellow cheeks have developed independently of the blue, though it seems that the white are a later product through the blue. Thus the northern species have the cheeks mixed white and blue, the white apparently being produced at the expense of the blue. Further, this elimination of blue cheeks is accompanied by an albinistic tendency in one species, but in the other by a complex melanism. Hence we cannot deduce much from the variation of one feature only. However, by the consideration of all the features we may arrive at some valuable result, and consequently it is necessary to lay some stress upon apparently trivial points.

The colour that is present in every species is red, so that we may suggest an erythristic element in the original species, the ancestor of *caledonicus*. It has predominated in the species *elegans*, become lessened in *flaveolus*, only surviving in the under tail-coverts of the northern species *adscitus* and *venustus*; in the species *eximius* it has developed coincidently with a yellow coloration, while in the western form *icterotis* it is now in a most interesting stage. Thus the coastal form appears to be mostly green on the back, though the under surface is red in the adult. In the interior the green back



AUSTRALIAN



H. Grönvold, del.

is becoming grey, and red tips are making their appearance on the feathers, and it seems that this grey stage is becoming fixed in the immature.

However, I had better place the facts of the coloration on record and discuss their suggested evolution afterwards. I will begin at *caledonicus* (Pl. III. fig. 1), as I believe it to be nearest the ancestral form. This species has a greenish coloration throughout, darker on the back and yellowish green below. A red frontal patch appears and the cheeks have a bluish tinge, and there is a faint bluish shoulder-patch. These are present in the young, but are indistinctly marked and can certainly be regarded as a comparatively recent acquisition. They become emphasized in the adult while otherwise the head and under surface develop more brightly into greenish yellow, the feathers of the back becoming black with, however, bright green edges, giving a scalloped appearance.

It is noteworthy that Tasmania is the home of this form. On the mainland two species seem to have evolved independently: *flaveolus* (Pl. III. fig. 3) has retained the coloration throughout, but has brightened on the under surface to pale yellow, and also the upper surface to the same colour, retaining the black bases to the back feathers. The upper surface of the tail has, however, become blue. The other species, *elegans* (fig. 2), has in the juvenile stage evolved a reddish cap, and the breast and vent have also attained that colour, the belly remaining greenish. The mature, however, has become a scarlet bird, the whole of the upper and under surfaces being that colour, though the bases of the back-feathers are black, while the upper surface of the tail is blue. The scarlet coloration is much deeper at the limits of its range, but in one district the scarlet has become orange and the bird has been confused with the preceding species.

The fourth species, *icterotis* (Pl. III. fig. 7), when immature recalls that of *caledonicus*, but has no red forehead, and the cheeks are yellowish not bluish. This species develops yellow cheeks, all the preceding species having blue cheeks, while it also acquires a red under surface. As regards the upper surface two phases are in being, one in which green still

predominates, as in the edging of the back-feathers, the rump, and the upper surface of the tail ; the other in which the upper surface is greyer, that being the colour of the rump and the edging of the back-feathers, which, however, in quite old specimens is replaced by scarlet tips, while then the upper surface of the tail becomes blue. This is the sole south-western species. A north-eastern and a north-western species, *adscitus* (fig. 4) and *venustus* (fig. 8), agree in showing pale yellow backs with the cheeks parti-coloured, but otherwise are remarkably different in that one tends to albinism and the other to melanism, using these words in a specific sense. The albinistic *adscitus* has the head and back pale yellow, in the former place tending to white and extending on to the throat. The yellow of the back only refers, of course, to the broad edges, the bases being as usual black ; the rump is of a different colour, varying from grey to blue, while the underparts are bluish, differing in localities from greyish to greenish blue. This species is of remarkable coloration, but is as peculiar for its instability, almost every mature specimen showing variation in extent and depth of the yellow coloration. It appears, however, to have passed the green stage in the immature, young birds showing a similar but duller coloration to the mature, with the head, however, speckled with blackish tips.

The north-western species, *P. venustus*, has the head black, the back black with yellow edges, the rump and under surface yellow, the feathers tipped with black, while the bases are black. The cheeks are parti-coloured blue and white, and the tail is blue. This species, again, has passed the green immature stage, as the young are quite like the adults.

The last species, *P. eximius* (fig. 5), has perhaps the most beautiful coloration of the series, and the specific name seems well chosen. The head and breast are bright scarlet, the lower breast golden-yellow, the abdomen green, and the under tail-coverts scarlet ; the cheeks white ; the black back scalloped with golden-green, the rump yellowish green, and the two middle tail-feathers green, the rest dull blue. The species occurs in the east from New South Wales to Tasmania.

I have considered these species as a whole, and now suggest the probable dispersion and evolution of the forms.

I propose to allow a northern origin for the group, and I conclude that the ancestral form was purely green. In the germ-plasm we may assume there was a yellow element, a blue element, and a red element.

The blue element shows itself in the blue cheeks, blue shoulder-patch, and generally blue tail. The yellow element is seen in the two northern species in full play, subdued in the eastern species, and almost entirely missing in the western.

The red element is noticeable in all save the two northern species, where, however, it crops up erratically in the north-western form.

The varying dominance of these elements has constituted the species, but the exact stresses are at present unknown, and the excitation of interest in the search of these is the purpose of this note.

Thus the geographical distribution of the species admits of theories of evolution without giving clues to the stresses, while these cannot be suggested from knowledge of their environment.

First, we may suppose that the green bird entered Australia by way of Cape York, and travelled down the east coast into Tasmania, and along the south coast into south-west Australia. It is probable that the central and north-western parts of Australia were submerged or separated. Tasmania became isolated, so did south-western Australia, the latter division not remaining permanent as did the former. The stress in both cases was towards the preservation of the green coloration, but the erythristic element shows itself in the red forehead, the xanthochroistic in the head and under surface, the cyanistic in the cheeks and shoulder-patch in the Tasmanian form; while in the south-west species the xanthochroistic has been suppressed in favour of the erythristic, it in its turn eliminating the cyanistic in the cheeks. We thus see a yellow-cheeked species with, however, the blue shoulder-patch, while the yellowish under surface has become dull red. Since this stage was achieved a further development seems to be

taking place by the revival of the cyanistic element, and this has caused the back-feathers by interaction with the erythristic element to become grey, while the blue tail-feathers come into their own as seen in the eastern forms. Then still the erythristic element is working, and we find the grey eliminated in favour of red. All these stages can be seen at once in a series from the west, and, moreover, it appears that the grey phase is becoming the juvenile plumage and the red the adult, the immature green of the coast being lost; further, on the coast the green is more or less perpetual, the back and tail-feathers remaining in that colour. We can guess that the climatic conditions in these cases favour the changes denoted, but in other parts of Australia similar climatic conditions are associated with entirely different coloration.

To return to the Tasmanian form; on the islands of Bass Straits we find it varying, being constantly darker, but in one case larger, in the other smaller, while in the one it has red under tail-coverts, in the other green. No reason for this variation can be suggested at the present time. On the mainland, as regards the south three species occur: one is the mainland representative of the Tasmanian species in which the xanthochroistic element has maintained itself, and the bird has become practically wholly yellow, the blue cheeks, blue shoulder-patch, blue (upper) tail-feathers, and red forehead being unchanged. It has varied only in the depth of the yellow.

The second is the erythristic form of the group, and this is the dominant species, so far as can be ascertained, in eastern Australia. Commencing life with a red cap, red breast and vent, blue cheeks and shoulder-patch, otherwise all green, it has developed all the head and under surface scarlet, the edges of the feathers of the back scarlet, the tail blue above, the blue cheek and blue shoulder-patch persistent; it will be noted that the xanthochroistic element has been entirely suppressed, though the cyanistic has maintained its usual standard. Variation in this species is notable and interesting. At the extremities of its range, it has become smaller and melanistic, while it is suggested that

at one (the southern) limit it takes on its mature plumage, if not from the nest, at least very soon afterwards. In other parts of its range, immature specimens are much more plentiful than adults, and it is recorded that they commonly breed in the immature plumage. Keartland concludes that males do not take on the mature plumage until two years old, and that females continue in the immature state much longer. There are further notes that sometimes the young in the nest are plumaged as the adult, but more evidence of this is required. However, at the eastern limit, and geographically not very distant from the southern end of its range, the xanthochroistic element has regained strength and the scarlet has become orange. This has continued in some cases so that fully adult birds have been mistaken for the xanthochroistic species living close by. We have here a representative species and a representative subspecies very closely approaching each other, through the revival of the dominating element.

Thirdly, coincident with these species is a third, in which the erythristic and xanthochroistic elements have developed without interference, though the cyanistic has been suppressed. In this species the cheeks are white, the head and breast scarlet, lower breast golden yellow, abdomen green, under tail-coverts scarlet; the back scalloped with golden-green, rump yellowish green, and tail green.

Little variation is seen in this species, which ranges into Tasmania. The most important point is that it seems to be getting brighter-coloured, and is increasing owing to the destruction of bush, it having been christened "a bird of sunshine." We may conclude that here the xanthochroistic element is developed under sunlight, but this would not account for the yellow cheeks of the western form nor the yellowish underparts of the Tasmanian species (*caledonicus*), while this species (*eximius*) ranges into Tasmania and the yellow becomes more green. So far as I can discover, the immature take on the mature plumage from the nest, proving that this is the most specialized of the southern species.

The two northern species can be treated together, as they have many peculiarities in common; in both the immature

green plumage has been lost, in both erythrism is missing, in both xanthochroism is dominant, but in the one case cyanism is a strong factor, in the other melanism is a new and overpowering feature. I can see no reason for these differences, as the environmental stresses seem similar.

The immature of the north-eastern species (*adscitus*, Pl. III. fig. 4), which is the cyanistic one, has the head yellowish speckled with blackish, back with dull yellow scalloping, the cheeks blue and white, the rump and under surface dull greyish blue. The mature has the head and cheeks pale yellow, the back scalloped with bright golden, the rump and underparts greyish blue. Great variability in tone is seen in the species, in some parts the blue having a greenish shade, in others a greyish, while the cheeks are parti-coloured blue and yellowish white. However, the xanthochroistic tendency seems to be increasing, as the majority of fully adult specimens have the yellow of the head encroaching on to the throat and breast, and the more colour the paler it becomes, suggesting an albinistic tendency.

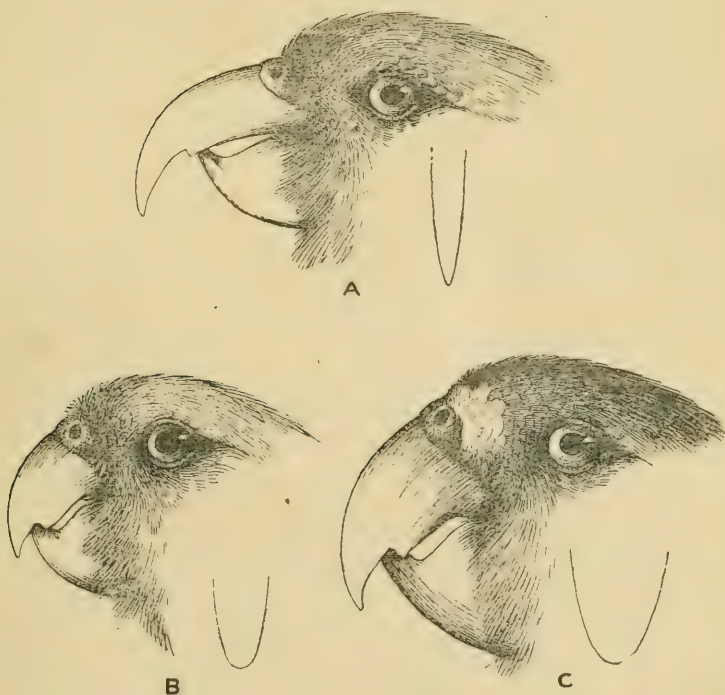
In the north-western species (*venustus*, Pl. III. fig. 8), the cyanism is entirely suppressed, being only seen in the cheeks, which are parti-coloured blue and white. The head is wholly black, the yellow-scalloped back being followed by a yellow rump, the feathers, however, are tipped with black; while the under surface is also yellow, the feathers tipped with black, and the bases black. An atavistic erythrism tendency seems to have been recorded in a red forehead and even a totally red head. The general progress appears to be strongly melanistic, the black becoming more extensive, and the yellow diminishing.

It may help in appreciating these changes to indicate in tabular form the dominating elements:—

<i>P. caledonicus</i>	Nearest ancestral, slight xanthochroism.
<i>P. flaveolus</i>	Strong xanthochroism.
<i>P. elegans</i>	Strong erythrism.
<i>P. icterotis</i>	Weaker erythrism, weak cyanism.
<i>P. eximius</i>	Strong xanthochroism, strong erythrism.
<i>P. adscitus</i>	Xanthochroism, strong cyanism.
<i>P. venustus</i>	Xanthochroism, strong melanism.

Throughout the series the colour-pattern is unchanged, although the colour itself has undergone many changes. Further, the young seem now to skip the immature plumage in some cases and in some species. Had this stage been achieved before this time, we would have had to guess at the evolution of the species, even as we now must in the case of the White Cockatoos. At the present time we have many facts, but little connection. One thing is certain, that we have here a colour-genus, though the colours are different.

Text-figure 2.



Side-view of heads and outline of frontal view of bills of—
A. *Purpureicephalus*, B. *Platycercus*, C. *Barnardius*.

The next genus, *Barnardius* (Text-figure 2, C), is separated by the larger size of the birds and different coloration, though no striking character can be cited as regards structural

features. This genus extends over southern and south-central Australia, but not into Tasmania. Two representative species appear recognizable (*B. barnardi* and *B. zonarius*, Pl. III. fig. 9 & Text-fig. 1, *b.* & *z.*), and the variation is marked. It appears that the normal green survived more conspicuously, though cyanism seems to have been the most dominant factor; erythrism, melanism, and xanthochroism are all seen, but in subordinate features, while the peculiar scalloped back has never been produced. The evolution of the feature in *Platycercus* is inexplicable at present, and in the present genus it has never been developed, though apparently both groups are referable to allied ancestral sources.

A red forehead only appears sporadically throughout the genus, which otherwise has suppressed the erythristic element. The chief difference between the two species appears to be the possession by the western form of a wholly black head: the eastern form has the crown of the head pale green, the nape brown; in some cases the brown predominates, in others the green. Generally, however, the chief feature is the bluish shade of the green back, rump, and breast; the xanthochroistic element seems confined to a yellow band across the belly, which is variable in size, sometimes extending from the breast to the vent, at others only appearing as a spot on the abdomen. The variation in size is noteworthy and needs careful study. The species seem peculiarly plastic, as subspecies can be distinguished with ease if few specimens are examined, but more material tends to confuse the judgment, probably because the birds are wanderers to some extent and the subspecies are limited in breeding-areas.

Speculation as to the origin of these species is handicapped by the survival in the south-west of a species commonly referred to a distinct genus, *Purpureicephalus* (Pl. III. fig. 6 & Text-figure 2, A), on account of a structural difference in the bill. Otherwise it is a *Barnardius* as regards colour-pattern, the erythristic element, which has been almost entirely eliminated in that genus, having maintained itself, as the bird has a red head and is mauve underneath with red under tail-coverts. I must note that the cheek-patch, seen in the genus *Platycercus*, is present in the genus *Barnardius* in a

deeper blue shade, and is even seen in this aberrant genus as a yellow-green patch. As the immature of the genus *Purpureicephalus* shows the evolution of the mature from a green bird, we have here a case of a structural difference developing at a more rapid rate than a colour-change. We are compelled to indicate our lack of knowledge of how colour-changes and structural changes are produced, but we do know that study of colour and colour-pattern will prove even more valuable than study of structural differences.

EXPLANATION OF PLATE III.

The upper and under sides of the following Parrots:—

1. *Platycercus caledonicus*.
2. " *elegans*.
3. " *flaveolus*.
4. " *adscitus*.
5. " *eximius*.
6. *Purpureicephalus spurius*.
7. *Platycercus icterotis*.
8. " *venustus*.
9. *Barnardius zonarius*.

VII.—*Rejections by Birds of Eggs unlike their own: with Remarks on some of the Cuckoo Problems.* By C. F. M. SWYNNERTON, C.M.B.O.U.

I HAVE referred very briefly to the general result of my first season's experiments in the above connection in 'The Ibis' for October 1916 (p. 557). I returned to the attack last year, partly to ascertain whether really fine discrimination is ever shown. The experiments were interrupted while still incomplete, but Major Meiklejohn's interesting and comprehensive paper in the April 'Ibis,' just received, recalls me to the subject and suggests the publication of my summary of them. Except in the case of the first dozen experiments, I only recorded the details of such as struck me as being of somewhat special interest; but not less, I should say, than fifty were carried out in all

in the two seasons, and this summary of them was written while the later details were still fresh in my mind.

The figures I shall refer to are those of Plate XIX. in 'The Ibis' for October 1916. I hope to figure later some of the actual eggs used.

I have found it very necessary, for convenience and clearness, to coin single word-terms to denote (1) birds that lay only one type of egg (with its variations), and (2) birds that lay two or several distinct types, as do many Cuckoos, Weavers, and Warblers. On the analogy of botanical usage, I am using the adjective "homoic" for the former and "heteroic" for the latter.

RESULTS OF THE EXPERIMENTS.

1. *Acceptances of changeling eggs occurred.*—Among other instances, a Lark-heeled Cuckoo (*Centropus burchelli*), laying pure white dove-like eggs, accepted and sat on a brown Fowl's egg weighing twice as much as one of her own; a *Cisticola natalensis*, with very pale, unspotted, blue eggs, accepted an egg of *Pycnonotus layardi*, again twice as large as her own and coloured like a Tree-Pipit's (cf. fig. 16); a Coly (*C. striatus minor*: fig. 2) accepted and retained a Canary's egg (*Serinus sharpei*) with black spots, and a *Tarsiger stellatus* (Robin-like) a Coly's; and Thick-billed Weavers (*Amblyospiza albifrons*, nearest fig. 14) took back eggs of their own, the appearance of which had been modified by the addition of blotches or smears of brown-madder water-colour paint.

2. *Such acceptance was not necessarily final.*—I placed a Layard Bulbul's egg, of the type shown in fig. 11, in a nest containing two eggs of *Telephonus senegalensis*, removing (as usual) one of the latter (white, with a heavy sepia cap). The Shrike returned, perched on the side of the nest and, leaning over, manipulated one or both of the eggs with her bill, then quietly settled down on to them and sat steadily. On my revisiting the nest later, the Bulbul's egg was gone and the Shrike was sitting on its one egg only. This was the last egg

of its clutch of three, for I had taken one previously, yet, although the eggs were fresh, it continued to incubate it and reared a young bird which gave me some very interesting tongue observations. Very numerous similar instances occurred throughout the experiments, and suggested that we need not regard a Cuckoo's egg found in a nest as quite necessarily finally accepted. The bird's first object seemed usually to be to warm the eggs, and attention to the intruder was postponed.

3. *Nor was the acceptance necessarily always voluntary.*—

A Layard's Bulbul with three eggs of the type shown in fig. 16 rejected a Weaver's egg of the type shown in fig. 9 of the same plate. One of the Bulbul's remaining two eggs was then replaced by a pigeon-like egg of *Centropus burchelli*. First one Bulbul returned and perched beside the nest; then its mate arrived and perched on the edge. The first flew off, but the second stood gazing at her new and enormous acquisition, motionless, for approximately one minute. Then she slipped down on to the nest and sat! I waited for a considerable time, and, as she did not stir and it was now getting dark, I left. Next afternoon the nest was pulled down a good deal on one side. The weight of the *Centropus* egg would not have done it alone, as the nest had been firmly placed. That egg was still there, but the Bulbul's egg was gone and a minute search below the tree failed to produce any trace of it. On another occasion a Stonechat (*Pratincola torquata*) adopted a Shrike's egg (*Lanius collaris humeralis*) given her in place of one of her own three. Several days later she was still sitting on it. I now replaced a second of her eggs with another Shrike's egg. When I revisited the nest it was deserted and the Stonechat's egg was gone, the two Shrike's remaining in possession. I am inclined to believe that the Bulbuls and the Stonechats of the above observations, finding the substituted eggs beyond their powers of ejection, accepted it perforce for the time being, and later removed their own egg. The distortion of the Bulbuls' nest may have resulted from a previous effort

to remove the heavy interloper, and in the case of a Warbler (*Cisticola natalensis*) there was suggestive evidence—in the form of a fresh hole made low down in the side of the nest and the position of the “Cuckoo’s” egg in relation to it—of such an attempt previous to the removal of the bird’s own eggs.

4. *Rejection of substitutes*.—The following was a witnessed example. Finding a nest of *Turdus tropicalis*, I replaced one of the Thrush’s three eggs, blue with bold brown spots and blotches, by a Shrike’s (*Lanius humeralis*), whitish closely freckled with light brown. Finding that leaves blocked my view, I shortly returned to the nest to remove them, and the bird flew, as I thought, from it. Taking the incident for an acceptance, therefore, I replaced the Shrike’s egg with that of a Layard’s Bulbul, in which the contrast is even stronger (fig. 16). The bird, on returning, obviously at once noticed it and, leaning over, examined and examined, putting her head down and perhaps turning the egg about; then slipped away. As she did so, her mate appeared, went through the same actions, and left. The female thereupon at once returned, slipped on to the eggs without further hesitation, and sat. I went down and found the Bulbul’s egg gone.

After this discovery I put in a large white egg, brought me by a Kafir and unidentified. The male (brighter bill) came first this time and definitely, from his movements, must have turned the egg about. He looked and looked at it in the gravest manner (a bird *can* look grave!), and at last went off. I feared desertion, if the egg should be beyond their powers of removal, so went over quickly and replaced it with a *small* white egg (*Colius striatus minor*, fig. 2). One of the birds, almost certainly the female, quickly came back, picked the egg up in her bill, and disappeared with it behind the foliage—perhaps wondering at her mate’s difficulty!—then returned and sat on her own two eggs. In a subsequent experiment I watched the Thrushes, again after an inspection by each bird in turn, remove two Shrike’s eggs from the nest; but they flew off behind

the foliage with them, and I again failed to see their final fate. A small boy, who had seen the commencement of the first experiment from a different angle, told me later that the supposed acceptance of the original Shrike's egg was not one, the bird being still a couple of feet from the nest when my approach frightened her away.

In my experiments generally I actually witnessed only a few of the rejections: most of the experiments I had not time to watch, and in those I did watch initial acceptance was the more general rule. In very few cases, again, did I recover the "Cuckoo's" egg. It was evidently usually carried away, as excreta and egg-shells so commonly are, probably to avoid revealing the nest to enemies. In some cases—for all I know, in most—the bird definitely pierced the shell; so that even if the Cuckoo had witnessed the ejection, there would be no possibility of her using the egg again.

5. *Closer selection.*—I placed a specially richly-coloured egg of *Pycnonotus layardi* in the nest of a Yellow-streaked Bulbul (*Phyllastrephus flavistriatus*), removing one of the latter's. Unluckily, the small boy who had showed me the nest at once announced another within a few yards, and I went to inspect. Returning within a very few minutes, I found the Yellow-streaked Bulbuls just drawing off and the Layard Bulbul's egg still in the nest, but *spiked*. The eggs were by no means unlike, excepting for the fact that in the latter the darker markings were less definitely gathered into a zone. I have already mentioned the rejection of an egg of *Sitagra ocellaria* by *Hyphantornis nigriceps* laying spotted blue eggs ('Ibis,' Oct. 1916, pp. 558-9). Though not really like each other, these eggs were not greatly in contrast in a dark nest. But a far better case than either of these was that of a Layard's Bulbul that rejected eggs of its own species that differed very slightly indeed from its own, and even its own egg when its zone was widened by the addition of markings (of the colour and size of the others) in water-colour paint. I will give the whole experiment below. The last

eggs taken from the nest were unluckily destroyed by a cat when I had brought them in to blow. It was a disappointment, as I had hoped to exhibit all, feeling that no one could see them together and deny that selection by foster-parents might have brought about the very closest resemblances that exist between any Cuckoo's eggs and its host's. I hope later to figure the others*.

6. *The ability to distinguish did not depend entirely on the presence of the host's own eggs for comparison, though their presence was undoubtedly helpful.*—When two of the eggs of a Rock-Thrush (*Monticola angolensis*) hatched, a third with which I had been experimenting failed to hatch. I had no other blue eggs in hand, so painted a white egg of *Hyphantornis jamesoni* greenish-blue and substituted it for the Rock-Thrush's egg. It was adopted. A few days later I took it out and put in a Layard Bulbul's egg. It was rejected. I then returned the painted egg, and it was adopted. Two days later I painted it with a number of light brown-madder blotches, and it was rejected. Actually the Weaver's egg was painted of a slightly deeper shade than the Rock-Thrush's and, I fear, rather smearily. It also differed from it in its elongated shape and somewhat smaller size, and it is perhaps doubtful if it would have been accepted had the host's egg been there for comparison. But *wider* departures were at once rejected. A Bulbul (*P. layardi*), that had discriminated very finely, nevertheless accepted two eggs of another form (of her own species) on my finally removing her own two eggs; so that it may actually be that a Cuckoo's best chance would lie in finding a nest with only one egg.

7. *Evidence for the view that polymorphism in the host's eggs may be of use against Cuckoos.*—I watched a Bar-

* On p. 568 of 'The Ibis' for October 1916, I spoke of *Pycnonotus layardi* as laying very variable eggs, but did not include it in the heteroic category. This was hardly correct, for its eggs may be divided into several distinct forms, even though they are close enough to each other and sufficiently connected in some cases by transition to give the superficial appearance of general variability.

throated Warbler (*Apalis thoracica*) accept an egg of *Sitagra ocellaria*. Later I found the egg lying spiked below the nest, and the Warbler sitting. The *Apalis* eggs were white with bold, scanty, red spots, and not far away was another nest of the same species containing blue, closely-freckled eggs just like miniature Stonechats'. I exchanged an egg from each nest. I watched each *Apalis* accept the other's egg; but three hours later the first had rejected, and the egg was lying spiked below the nest. Next day, at noon, the second *Apalis* had not yet rejected; so, regarding it as an acceptance, I removed one of its own eggs for an experiment of another kind. On returning with it six hours later, I found the white, red-spotted egg gone and the bird's own egg in sole possession. Other cases occurred in experiments on Layard's Bulbuls. The very fine discriminators already mentioned rejected an egg of *Lanius humeralis*, accepted their own back, rejected an egg of their own species but of another form, accepted their own back, accepted instead an egg of their own form from another nest, rejected one differing slightly from their own form, accepted their own egg back, rejected the latter on my painting on to it a few additional small markings, widening the zone, rejected an egg of *Colius striatus* substituted for one of their two remaining eggs, did not desert the one survivor, and accepted the other one back. However, on my now substituting, for both these, two eggs belonging to another form, they accepted them, as already related. It was a very pretty experiment.

Weavers (*Hyphantornis jamesoni*: vide figs. 3, 5, 7, 9, 12, 15) very freely and in several experiments rejected eggs of their own species but not their own form.

On the other hand, the pair of Bulbuls (*P. layardi*) that had supplied one of the eggs rejected by the highly discriminating birds—of the form shown in fig. 11—had accepted, instead of it, two other eggs of their own species but belonging to quite different forms.

8. *Some birds accept anything.*—This last-mentioned pair of Bulbuls accepted also, and retained, an egg of *Colius*

striatus minor (fig. 2) and, later, one of *Sitagra ocularia* ('Ibis,' 1908, pl. viii. fig. 5); also, subsequently, a white egg of *Hyphantornis jamesoni* (fig. 3), and, when this was removed by myself, one of *Telephonus senegalus*, white with a heavy sepia cap.

9. *Size and shape not always important where coloration is nearly the same.*—"12.12.15. *Serinus sharpei* nest in low custard-apple bush, conspicuous. Three eggs, fresh. Replaced one (22×15 mm.) with a white egg noticeably smaller than itself (19×16 mm.) and far rounder—*Ispidina natalensis*, practically certainly. Adopted. Later I put in a white *Hyphantornis jamesoni* egg (fig. 3), a good deal bigger than the Canary's egg and differently shaped (26×16 mm.). Adopted. A Layard Bulbul's egg was at once discarded; but the Canary was still sitting on the *Hyphantornis* and smaller egg, and one of its own, a few days later. A Coly (*Colius striatus minor*, fig. 2) with the usual chalky-white eggs (23×18 mm.) accepted and retained one of the Canary's (white, but smooth and of a different shape).

An egg of this Canary is figured in 'The Ibis' for 1908, pl. viii. fig. 4. Those in the nest in question were pure white and hardly spotted at all: one was really unspotted. The small round Kingfisher's egg of the experiment was one of a clutch that I had found in an ant-bear's hole, mixed up with the silt from a heavy rain. The clutch contained a Cuckoo's egg, of the same white colour as the others, but larger (26×20 mm.), and, like the others, it showed slight incubation, indicating that it had been accepted and sat on before the catastrophe occurred. It was probably that of *Coccytes hypopinaris*, a common Cuckoo here; and it is rather a question how its inserter could have got to the Kingfisher's nest, unless this was laid in the main hole or a very shallow passage off it. "Both Millar and the Woodwards have taken the eggs [of this Kingfisher] from the earth of an ant-bear" (Sclater, Fauna S. Africa, iii. p. 84). *Chrysococcyx* has also been recorded as laying in the nest of *Ispidina*, but I am unable to lay hands on the reference.

It is interesting here to recall Mr. Stuart Baker's conviction, arrived at as the result of the study of "very many hundreds" of eggs of Asiatic Cuckoos (including over a thousand of *C. bakeri* alone), that . . .

"2. The majority of foster-parents are totally unconscious of incongruity in size between their own eggs and that of the Cuckoo.

"3. That they are not conscious of variation in shape."
(*Ibis*, 1913, p. 386.)

For "totally unconscious" I would substitute "relatively unsuspecting"; yet I cannot help recalling the great disparity in size that sometimes in butterflies exists between model and mimic, and also various incidents in my insect experiments which showed that a bird may be far more strongly impressed by a very small difference in coloration than by a very large difference in size. My prettiest examples were obtained from a Milanji Bulbul (*Phyllastrephus milanjensis*). *Charaxes ethalion* is a butterfly with black non-mimetic males and many female forms, each of which is a beautiful mimic of one or other of the larger species of *Charaxes* that are protected by their size and power. Yet the Milanji Bulbul, so far from realizing that it was *size* that was at the bottom of her trouble with the larger species, always, after an unpleasant experience with these, refused to touch the small mimetic individuals also, though she readily attacked their differently-coloured males.

10. *Sight, not smell, was the means of recognition.*—In every case in which the coloration of the eggs was the same the substitute was accepted, even by birds that freely rejected eggs of the wrong colour: this even where the eggs belonged to different families and differed in taste (as I ascertained) and therefore, presumably, in smell (which I could not sufficiently appreciate). In my very numerous experiments in regard to the preferences of insectivorous birds the evidence was all against the view that smell is used by them to an appreciable extent for purposes of recognition (though it is true that discomfort was shown

in the presence of highly pungent smells, amounting almost to a volatile discharge, and that short-tongued birds such as Hornbills apparently did their tasting by an intake of breath which, so far, was equivalent to smelling). The view seems to be confirmed further by the acceptance by a Rock-Thrush of a Weaver's egg painted blue, and its rejection of it when a few brown markings were added, the similar rejection by a Bulbul of its own egg when a few small brown markings were added to it, and, if it be supposed that brown-madder paint may smell worse than blue, by the retention of eggs by *Amblyospiza* with much brown-madder paint added. The fact that an egg, drilled but unblown and already smelling unpleasant, was accepted by Bultuls and retained until I removed it two days later, might also be regarded as bearing on the point.

11. *The Cuckoo's habit of removing one of the host's eggs seemed sound.*--In three or four cases I added an egg to a clutch which already contained one accepted egg of the wrong colour. In each case the addition was at once followed by the rejection of one egg. Thus, at a time when the nest of the indiscriminating pair of Layard's Bultuls I have referred to above contained two of the birds' own eggs (fig. 11) and one of *Telephonus senegalus*, I added a fourth egg--a white egg of *Hyphantornis jamesoni* (fig. 3), for which the *Telephonus* egg had been substituted more than twenty hours before--I found shortly afterwards that the *Telephonus* egg had been ejected. As both the Shrike's egg and the Weaver's had previously been adopted, it was probably only the fact that there were now four eggs instead of three that caused the birds to reject one of them--and only one. A Yellow-streaked Bulbul adopted (quite likely, however, only temporarily, for I watched her examine it well) a Coly's egg; but on my putting back her own egg, making three eggs in the nest instead of the original two, she at once on her return flew back to her mate, and one of the birds returned, picked up the Coly's egg in its bill after a good deal of fumbling and trouble, and flew off with it, gradually swerving towards

the ground with (it seemed) the weight of the egg. During the last few yards of her flight she disappeared behind tree-trunks, but I judged that she must have reached the ground about fifty yards from the nest, which was about twenty feet up. A careful search failed to recover the egg, but it had been very visible in the bird's bill as he, or she, flew past within a few feet of myself.

The occasional ejection by the Cuckoo of one of its victim's eggs the day before it inserts its own, quoted by Major Meiklejohn, would seem likely to lessen slightly its chance of getting its own egg accepted; but this is a point yet to be tested. I think that on all the occasions on which I brought the birds' eggs to their original number again after an interval, it was by the return of their own egg. This was never rejected unless its appearance had been altered, and, of course, if the Cuckoo's harmonized well it would not be rejected either.

Against the suggestion conveyed by my results must be placed cases such as that quoted by W. L. Slater from Ivy ('Fauna S. Africa,' Birds, iii. p. 198). Here a nest of *Andropadus importunus* was found "containing two of the usual eggs . . . in addition to five large Cuckoos' eggs. These all together more than filled the small cup-shaped nest, the rightful occupants of which" had apparently not deserted. Such a case must be rare, and could hardly happen in the case of many foster-parents; but from other records it would seem that this Bulbul is quite the "Hedge-Sparrow" of South Africa, in the sense of being readily duped—a contrast to *Passer arcuatus*, the "Redstart" of the same country. In any case more experiments are needed.

12. *The number of rejections of unmatched eggs so very greatly exceeded the acceptances that conclusions based on the eggs found are likely often to be unreliable, especially if elimination is not well allowed for.*—Without having recorded nearly all my experiments—a pity from this point of view—I should say that rejection of the ill-matched substitutes took place in about 80 per cent. of cases. This

at once suggests an argument which might be urged by critics of the view that mimicry takes place at all in the eggs of heteroic Cuckoos. I have lately had letters from such critics, though they did not use this argument. It is that, for the most part, we see only the successful candidates in each annual "examination." If we could also see the possibility for larger numbers that were "ploughed," we might find that the great majority of the eggs laid in the nests of a given host—even of a host in whose nest we rarely find a wrongly-coloured Cuckoo's egg—by no means resemble its own eggs, and that the alleged tendency to resemble them has no existence till after the "examination."

I once planned an experiment to illustrate this criticism. It was checked at the outset by the general interruption of my experiments, but such as there is of it will just serve my purpose. Taking two Coly eggs (white), I placed each of them in a different Layard Bulbul's nest. From one of these nests four wrongly-coloured eggs had already been ejected, but it still contained an egg of its own species and form that had been adopted. Going the rounds later I found that only one of these Bulbul's nests contained a "Cuckoo's" egg and that this resembled the bird's own.

Conclusion. "A hundred per cent. of the eggs of *Pseudococcyx experimentor* found in the nests of *Pycnonotus layardi* resemble the eggs of the foster-parent." The actual position, in this case, as we happen to know, was that only one egg out of seven placed in the Bulbuls' nests was of this type, the remaining 85 per cent. having been utterly unlike those of the foster-parent. These represented the Cuckoos' eggs that we never see. This definitely limits us, for our direct evidence of mimicry, to eggs seen as soon as inserted and before the foster-parents' return: for, as some of my experiments showed, the latter sometimes remove the offending egg at once—and, by flying away with it, destroy all evidence of its having been there except such as is afforded by the incompleteness of their own clutch. This last line of evidence is fairly useful in Africa, less so in a civilised country in

which one or two eggs might have been removed by some tender-hearted collector.

However, the indirect evidence, which I shall refer to below, seems sufficiently strong.

Other results of our not seeing all the eggs that are rejected would be, I think, to make it difficult always to be sure, except on ovarial evidence and observation of behaviour, (1) of the duration of the laying season of particular birds—it might extend beyond that of the special host, but the eggs then laid would be mostly eliminated before being seen—or (2) of the total number of eggs laid. This is likely, I think, always to be distinctly larger than the number of eggs found by an observer and correctly attributed by him to a particular bird, unless we can assume not merely that the observer has found all the eggs laid but that the Cuckoo will have been successful in matching all her eggs.

DISCUSSION.

1. *Methods of dealing with the Cuckoo's egg.*—I have already shown that the removal of the interloper was the method adopted by nearly all the birds on which I experimented, that it was usually, apparently, carried right away, as are excreta, that it was sometimes spiked and that, in one experiment, it was merely dropped, after spiking, outside the nest. Of the two eggs treated thus, one was probably too heavy for the bird to carry, the other not, and another bird of the same species that was experimented on with a light egg apparently carried it away, for it could not be found. I have already referred to the alternative course, probably followed where the substitute was large. Practically no definite desertion of the bird's own eggs took place, even though some parents were reduced to sitting on a single egg. The Flycatcher, *Bradyornis murinus*, seemed to be an exception, three nests in succession being deserted, eggs and all—in one case after a substitute had been ejected, in the other cases after I had merely visited the nests. In a few cases all the eggs in a nest, substitute and host's eggs, disappeared, and this may have sometimes occurred through

the ejection of the substitute being followed by a decision to remove the eggs from a nest that had been detected; but it did not seem that this occurred in a larger proportion of cases than I found amongst nests on which I did not experiment, and in some cases the damage to the nest suggested that an enemy was responsible. Mr. Stuart Baker has mentioned an instance ('Ibis,' 1913, p. 398) in which all the eggs were smashed, "evidently by a bird's bill"—a case in which it seemed "as if the Shrike, in a fury at the deception attempted on it, had itself broken the Cuckoo's as well as its own eggs." I obtained no such instance myself, and *Lanius humeralis*, on which I experimented several times, was one of the birds that most tended, *apparently*, to remove its eggs after two or three attempts at cuckolding, but Mr. Baker's suggested explanation is quite likely correct. Similarly, the fact that I obtained no instance of desertion of the bird's own egg except in *Bradyornis* does not tell against his supposition that the deserted nests he found containing Cuckoos' eggs were deserted on account of the latter's presence, though this naturally requires a little proof unless such nests were proportionately more numerous than deserted nests of the same species (*Horornis*, *Garrulax*, *Mesia*, *Liothrix*, *Anthus*, *Lanius*, *Surga*, *Cisticola*) not containing Cuckoos' eggs. I remember well that as a school-boy in Ireland and England my main fear, justified by experience, was lest by visiting a nest too frequently or taking too many eggs I might make the bird desert. Here, in Africa, my fear is not so much the desertion of the eggs (though this sometimes occurs) as their disappearance, and the Kafirs, in giving their reason for avoiding tampering with a nest with eggs, or placing a charm in it if they have touched an egg, always say, not that the bird will desert, but that it *will take its eggs away*; cases are sometimes mentioned in which, as in the case I have myself mentioned above, the bird was seen carrying its eggs away. I am inclined to suspect that there really is some difference here, of a general nature, between the birds of the two countries, conceivably in relation to different dominant

classes of enemies. A similar general difference occurs in the number of eggs composing the usual clutch—five in England, three in south-east Africa; and here again the difference is probably dependent on some general difference in the conditions. That desertion is common, at any rate in some species, as a result of the insertion of a Cuckoo's egg, is shown by Major Meiklejohn's quotation of the fact that Wrens (in 150 cases noted by Walter), Willow-Warblers, Wood-Warblers, and Chiffchaffs invariably desert under these circumstances. Another mode of dealing with the Cuckoo's egg would seem to be to cover it with fresh nesting material, so that it remains built into the lining.

2. *The history of the parasitic habit.*—Wallace's view, I think, may be quickly dismissed. It was that, the colours of small birds' eggs being protective—fitting in, as he supposed them to do, with their chequered surroundings of light and shade—a Cuckoo's egg, unlike the others in the nest, would strike a discordant note “and lead to the destruction of the whole set. Those Cuckoos, therefore, which most frequently placed their eggs among the kinds which they resembled, would, in the long run, leave most progeny, and thus the very frequent accord in colour might have been brought about” (Darwinism, 2nd ed. p. 216). I have indicated elsewhere (*‘Ibis,’* Oct. 1916, pp. 531–532)* my view, which must, I think, be shared by field-naturalists generally, that it is impossible to regard Hedge-Sparrows' and Song-Thrushes' eggs, for example, as protectively coloured, and the survival of the “discordant” Cuckoos' eggs accepted by Hedge-Sparrows also tells against the theory. I have stated above that in my experiments, the robbery, probably by enemies, of nests containing discordant eggs was not more frequent than that of nests without them.

Darwin quotes the statement that some Cuckoos “manifest a decided preference for nests containing eggs similar in

* A correspondent regards it as my own view that the Song-Thrush's egg is protectively coloured. Evidently I did not make it sufficiently clear that I was merely stating an illustration of Wallace's theory and that I strongly disagreed with him.

colour to their own"; and I was interested lately, in looking up the 'Origin' for his views on the subject of Cuckoos, to see that the explanation I offered in 'The Ibis' (Oct. 1916, p. 561) for the young Cuckoo's habit of ejection was, in detail, that long ago given by Darwin. I am a bad reader, having little time for it—I have probably not read the 'Origin' through since I was a schoolboy, if then—and the idea came to me independently, as it was likely to do to anyone watching ejection and puzzled over its explanation. I mention the point here merely in order to apologize for having inadvertently brought forward the suggestion as my own.

I was interested further, however, to see that the general theory of the transition to parasitism, as I have seen it given by Newton and others, is also Darwin's. He refers to the fact that various birds occasionally lay their eggs in other birds' nests, quotes the Gallinaceæ rather particularly in this connection, refers to "the singular instinct of the Ostrich," in which family "several hen-birds unite and lay just a few eggs in one nest and then in another, . . . as with the Cuckoo, at intervals of two or three days," and refers to the fact that "the instinct of the American Ostrich, as in the case of *Molothrus bonariensis*, has not as yet been perfected, for a surprising number of eggs lie strewed over the plains, so that in one day's hunting I picked up no less than twenty lost and wasted eggs." Darwin also speaks of the stages in the transition that are illustrated by the American Cowbirds, quoting from Hudson, and especially remarks on the fact that in *M. bonariensis*, with parasitic habits already well developed, "several [birds] together sometimes commence to build an irregular untidy nest of their own," which they apparently never finish, and that "they often lay so many eggs—from fifteen to twenty—in the same foster-nest, that few, if any, can possibly be hatched."

It is possible out of Darwin's material, and with one or two small additional suggestions, to frame the following theory. So far as one can tell at this date, it may represent an approximation to what has actually taken place.

We start with a polygamous species, with several females laying in the same nest, as in *Crotophaga*. The male or first-incubating females drive away late layers or the nest becomes over-full. The layers then go off and either lay in other nests of the same species, not yet full, till the same thing happens there, or, nests failing, drop their eggs about and waste them. In both the earlier and the later nests Darwin's suggested advantage—undelayed incubation of eggs laid at nearly the same date—comes about. Darwin laid stress on this advantage in relation to the Rheas, it being his own theory here, and strongly endorsed the view of "some naturalists" that parasitism on unrelated species would confer a similar advantage; but it may be said, I think, that the advantage would have already been present in the stage thus described—the stage reached by the Rheas,—and that parasitism, therefore, would confer not so much this as a further advantage. For where, instead of wasting their eggs, the layers placed them, nests of their own species being no longer available, in nests of other species (a very natural development), a certain proportion of them would be saved: perhaps a very large proportion when the habit first arose, if it be true that selection has had much to do with the perfecting of the qualities of suspicion and discrimination in hosts, and if overcrowding of the foster-nests were either not serious or were eliminated early by selection. The hens that became broody last, or at least, perhaps through laying most eggs, would tend to be the chief layers in strangers' nests, and the loss of the desire to brood, being now correlated with a habit that brought with it all the advantage between probable survival and certain elimination, might become accentuated in succeeding generations through the action of natural selection.

A point to be borne in mind, I think, is that a primary necessity throughout will have been that of obtaining the right food for the nestling and that the latter may not have been so well adapted at the outset to a somewhat varying diet as it perhaps is now. It may be the case (and this could be tested experimentally and by stomach-examination)

that necessities of diet have much to do with the early stage now represented by the relations between the Cowbirds *Molothrus badius* and *M. rufo-axillaris*, though it is in any case only natural that the first layers in nests of other species should go, where it is available, to a species nearly related to their own.

Again, when the next and bigger step was taken of placing eggs in the nests of quite unrelated birds, food will have remained a prime consideration, and this seems to me to have a bearing on another point. For, surely, the safest rule in this connection, as well as the natural thing to happen, would be for the Cuckoo to base its choice primarily on recognition of the foster-parents that had successfully reared itself. It is quite true that in butterflies, in which recognition is primarily by smell, a male will, after a first pairing, recognize also by sight, as is evidenced by the courtship of model by mimic and mimic by model that I have myself often witnessed. It is similarly possible that, having seen its own egg, a Cuckoo may be influenced by egg-coloration in its choice of nests; but I cannot help feeling that the order of probability, or, if (as is sometimes likely) all three means of recognition are used, the order of importance will be, (1) appearance of foster-parents, (2) of nest, (3) of eggs. The criticism, frankly adduced by Major Meiklejohn himself, that Cuckoos regularly deposit in Hedge-Sparrows' nests eggs unlike those of the foster-parent, seems to me to tell too strongly against the opposite view to be lightly passed over.

Selection would soon follow the adoption of the habit of placing the eggs in other birds' nests—selection of discrimination in the more usual hosts and of deceptive coloration in the Cuckoo's egg. Discrimination may be rarer, and mimicry less needful, at first than later, and it is in this connection that the transition so well illustrated by my experiments is suggestive: the transition between such a bird as the Hedge-Sparrow must be (my experiments on any one species were insufficient to convince me that I

had found an equivalent here) through such species as *Pycnonotus layardi*, individuals of which discriminated closely, others less closely and one or two not at all, to such a species as *Hyphantornis jamesoni*, which, in my experiments, ejected or destroyed all eggs that were appreciably unlike its own. It is even possible that the Hedge-Sparrow may be a recent victim and the Redstart an old one, and the transition between them as much a matter of past selection as of any original difference in discriminating power between the species concerned—not that this will not, in many cases, have existed.

With the growth of discrimination on the part of the species most victimized—and special victimization would be a matter both of abundance and (through natural selection and correct choice of other survivors) of suitable feeding—would come mimicry. I doubt whether this would always end the matter, for, when a Cuckoo's egg became indistinguishable from its host's, variation in the latter would still afford the means of distinguishing it from the Cuckoo's, and it is even imaginable that a race may in some cases have taken place between the host's eggs and those of the overtaking Cuckoo. High distinctiveness might sometimes have been the result. In other cases sheer variability would help much to baffle the Cuckoo whatever its choice were founded on, and useful polymorphism, as in the eggs of the heteroic Warblers and Weavers, might even be selected, and the influence of parasitic birds have thus contributed much, in the course of ages, towards the production of that quality of diversity that to-day so characterizes Passerine eggs. It will not have been the only factor, for the possibility of preference remains, and the actual stimulus to variation will doubtless always have been environmental. Experiments in this last connection might have very interesting results.

The similar diversity that is found in the eggs of Cuckoos has been sufficiently explained by other observers. I am not inclined to regard homoism (if the word is permissible) as necessarily more recent than heteroism in Cuckoos' eggs.

It seems to me rather that the original parasite is likely to have laid eggs of approximately one type, like some of the non-parasitic Cuckoos to-day, and that, whether this was the case or not, the two conditions are likely to have alternated one with the other in any given locality. The homoic condition will have given place to the heteroic where a dominant species, hitherto the chief victim and model for mimicry, has for any reason (including the over-success of the Cuckoo) become relatively scarce, and where it takes several species of birds to make up the population needed for the consequent overflow on the Cuckoo's part. It (the homoic condition) will be resumed again as one of these species becomes abundant and more and more discriminating; for the other types of Cuckoos' eggs, dependent for their continuance on the scarcer or less discriminating hosts, will sooner or later, if the chief host be really abundant, come under its inspection and be eliminated. At the same stroke, obviously, will be eliminated the tendency to choose other species as foster-parents, while instances through difficulty in finding the right foster-parent will also be reduced by the latter's abundance.

In view of the fact that the dominant soft-billed birds are different in different localities and that in some localities there is no very marked dominance in numbers on the part of any favourite species, it is easy to believe that "the eggs of the Cuckoo (*C. canorus*) vary more in colouring and markings than those of any other known species" (Rey's first conclusion, as quoted by Major Meiklejohn). The case is readily comparable with what occurs in mimetic genera in butterflies, such as *Pseudacraea* and *Euralia*. This mention of butterflies at once recalls the fact that in polymorphic mimics the inheritance has been practically proved by breeding experiments to be Mendelian. Further, whether the dominant or the recessive form will be abundant depends on the presence of the appropriate model. The *hippocoon* female form (incomplete recessive) of *Papilio dardanus* is abundant at Chirinda (S. Rhodesia) and also in other places where

its model, *Amauris dominicanus*, is abundant. The *cenea* form (incomplete dominant) * is abundant at Natal, where that *Amauris* model is nearly absent, but *Amauris echeria* abundant. But in each case the scarce form is still kept up in small numbers through the Mendelian relationship and might replace the other form were a change in the numbers of *A. dominicanus* to lead to a corresponding change in the incidence of selection. Other female forms of the species also occur, mostly mimetic, but one or two not mimicking any pattern at present extant amongst models.

The same principles seem likely to apply in the case of the eggs of the Cuckoo. Here we have exactly the same evidence of the dependence of particular forms on the presence of particular models, the same local results from changes in the relative abundance of particular models, the same "mixed" and now non-mimetic forms, scarce or apparently absent where some model dominates completely, more abundant where this is not the case †. And the appearances of the case—the highly distinctive types obviously duly segregated in generation after generation,—the necessities of the case, and the analogy of the butterflies all strongly suggest Mendelian inheritance.

With the criticism of the theory that *similarity of diet* will have produced resemblance between the Cuckoo's egg and the host's, one cannot but agree; but the view that particular foods may affect the coloration of the eggs of birds is not to be summarily dismissed. Dr. Péringuey told me, in 1915, that ducks fed on acorns at the Cape laid black eggs, and I was interested to see a black duck-egg a few days later, shown me by Mr. Fitzsimons of the Port Elizabeth

* This conclusion is indicated by the results, in the F_1 generation, of a series of matings I obtained recently between individuals of a pure *cenea* strain (out of pupæ sent me from Natal by Mr. E. E. Platt) and individuals of pure *hippocoön* parentage from Chirinda.

† The facts here referred to constitute the real evidence for the existence of mimicry in Cuckoos' eggs. Mr. Stuart Baker has stated them very convincingly for the Asiatic Cuckoos in 'The Ibis' for July 1913. The fact that the size of the egg is not reduced where the usual host lays a large egg is also not to be despised.

Museum, and presumably produced in this way. The black deposit was superficial, but in this, of course, it did not differ from the chalk-layer of certain eggs and the heavier blotches of, e. g., certain eggs of *Pycnonotus* and *Phyllastrephus*.

3. *The host's and the Cuckoo's defences.*—The host's defences include, first, means of preventing the Cuckoo from depositing its egg. Attacking or mobbing the Cuckoo is one such means, and here it would seem that the habit of nesting in colonies must be exceedingly useful. I have seen the members of a Weaver colony drive off a Didric Cuckoo, and in a previous instance I saw a similar mobbing, at a large colony, of a dark bird, probably a Cuckoo, that I failed to obtain a sufficiently good view of for identification ('Ibis,' 1908, p. 11). It must be difficult for a Cuckoo to lay undetected in such a colony, and the mobbing is, of course, more formidable than the attack of a single pair of birds. Even so, the Cuckoo hangs about such colonies and is sometimes successful, and, if detection should be avoided—which is unlikely,—the close collection of nests would, of course, improve its opportunity of matching its egg, if it should have become its habit to attempt to do so. Mr. Austin Roberts's observation (Journ. S. A. O. U. ix. 1913, p. 33) that "*Chrysococcyx cupreus* sometimes deposits its eggs in the nest of *Ploceus auricapillus*, but apparently only when there are one or two nests in a tree," has a bearing on this point. As he had spoken of "dozens of nests" in some of the trees, I take his meaning to be that isolated nests are mostly selected. This would seem to testify to the usefulness of the colony.

Prevention failing, the defence afforded by the colouring of the host's own eggs comes into play. I have already ('Ibis,' 1916, pp. 570 & 573; 1917, p. 271) expressed my opinion that, whatever be the correct explanation of variability in such eggs as the Common Guillemot's, polymorphism in the eggs of many small Passerines is probably to be explained as having been selected in relation to the baffling of Cuckoos that might otherwise more often match their eggs. The results of my experiments quoted under Conclusion 7 (p. 132), above, show clearly that there is nothing

visionary about this suggestion, and, in view of my results from the strongly heteroic Warbler, *Apalis thoracica*, I am much interested to note that two eggs of *Chrysococcyx klausi*, taken by Messrs. Haagner and Ivy from its nests, resembled in coloration (though not in size) the particular form of the Warbler's egg with which they were found (Journ. S. A. O. U. ii. 1906, p. 36, figured pl. iii.).

Discrimination comes next, and this, as my experiments seemed clearly to show, has in some birds probably become a most efficient defence, right up to the point at which the coloration of the Cuckoo's egg exactly resembles that of the host's. The carrying away of the egg that apparently took place in most of my experiments was possibly useful, not merely in relation to detection by enemies, but for the baffling of the Cuckoo, should it be in the habit of ever again utilising the egg, though I do not regard this advantage, if it exists, as other than incidental. Spiking, and the evidences of destruction of the egg seen in Weavers' nests, would be still more effective, but the former may sometimes be merely a convenient way of carrying a large egg out of the nest. This was obviously not the explanation for the spiking of a *Pycnonotus* egg by a *Phyllastrephus*, described above.

Whether its fellow-nestlings, once the Cuckoo is hatched, have any further chance of escape, might be the subject of further observation. Especially might those instances be studied in which the young Cuckoo retains nest-mates. Some nestlings have, from the outset, far greater grasping-power than others and cannot be lifted without bringing the lining of the nest with them. I found that differences in this respect made a difference to the young Cuckoo I experimented on, but I had no really strongly-marked example to test and the Cuckoo successfully solved all reasonable problems that I set him to work on. Against the possibility that grasping-power might be of use to the host's nestling may be set Mr. John Craig's fascinating observations which I have recently seen quoted in Mr. Percival Westell's book on 'British Bird-Life.' Truly Homeric struggles took place

between his two Cuckoos and the prehensile feet were freely used to prevent ejection, but the stronger Cuckoo eventually threw the weaker from the nest, and repeated the performance on its being replaced. Experiments of my own, as well as general observation with regard to Cuckoo nestlings, tell against the view that the hosts ever eject or neglect the latter through noticing the differences between them and their own young, and the probability generally is, I am inclined to think, rather against the explanation of the coloration of the young Koel that I shall refer to below.

The Cuckoo's defence against the attempts to prevent her placing the egg in the nest must, where she does not intimidate, lie largely in cunning and adroitness and in observations of the birds for the purpose of choosing a suitable moment. I am thinking especially of the case of a colony and of those Cuckoos which lay in the nests of Corvidæ, for the problem would be simpler, though not always quite simple, in the case of isolated nests of small birds the eggs of which were not yet being incubated. The thickness and strength of the shell, again, must occasionally save it from breakage when it comes to a scuffle, as well as permitting it to be carried about with impunity. It is even possible that the extraordinarily tough skin of the Honey-guide, selected primarily in another connection, may be highly serviceable to it as a parasite in enabling it to face attacks from heavy Barbets and its other strong victims. Haagner and Ivy (Journ. S. A. O. U. iii. 1907, p. 103) speak of "all the Honey-guides" as "very persistent in 'commandeering' the nest-hole of other birds, as they are generally fiercely attacked by the foster-parents," and the accounts one has read of the actual encounters certainly suggest that they show much fearlessness of their heavier antagonists. Whether the hawk-like appearance of several Cuckoos is backed up by a hawk-like approach to the nest and the insertion of the egg facilitated by the consequent intimidation of the owners is still, I take it, a point for observation. It has been suggested, I believe, that the Drongo-Cuckoos are enabled by their likeness to their hosts to approach the latter's nests

without arousing suspicion. This may actually be so if the theory has been based on observation, but I am impressed by the fact that our African Drongos are more intolerant of the approach of another bird of their own species, not merely to their nest, but even within their "beat," than any other bird I know—and this is saying much.

Once the Cuckoo's egg has been placed in the nest it has to trust to the host's lack of discrimination, or, alternately, to its resemblance to the host's eggs—and to this last its small size is generally acknowledged to contribute. It remains large enough, however, to be likely to give so small a host as a warbler much difficulty in removing it, as I saw in my experiments on *Cisticola*, and one might even amuse oneself by supposing that the *optimum* size might be one not large enough to fill the victim with complete conviction that it was a fraud, yet just sufficiently large to dissuade it, after an attempt or two, from trying to eject it! One of my Grass-Warblers, again *C. natalensis*, accepted and continued to incubate a Layard Bulbul's egg after what appeared to have been an initial attempt to eject it: here the fraud was obvious from the wrong coloration, but the bird had not the enterprise to remove its own eggs on failing with the Bulbul's. It is just conceivable, again—the point could be tested experimentally,—that the thick shell of a Cuckoo's egg, explicable, I believe, as the result of a reduction in size without a corresponding reduction in the amount of lime used, and useful as enabling it to be carried about, may also protect it from being pierced by such weak birds as Warblers—as the Bar-throated Warbler of my experiments pierced thinner-shelled eggs; and that this, with the difficulty of handling it otherwise which must be experienced by such small birds, may account for the Cuckoo's egg being so often left deserted in the nests of Wrens, Willow-Warblers, &c. At the same time, even should it be so strong—which probably it is not,—this would be of no use to it unless its own parent then removed it to another nest. If such intervention is the rule in relation to the egg, it seems hard to understand how Walter could have found as many as 150 deserted Cuckoos' eggs in Wrens' nests

alone. At the same time it would be the natural development in response to desertion, and Major Meiklejohn's record of the Hedge-Sparrow's nest, in which the host's eggs were less incubated than the Cuckoo's, does not stand alone. Mr. Ivy records finding a nest of *Andropadus importunus* containing an egg of *Cuculus clamosus*, slightly incubated, and two of the host's, fresh. A still better observation by the same naturalist was one in which a partly incubated egg of *C. solitarius* was placed in a nest which the day before had contained only two fresh *Cossypha caffra* eggs. It seems obvious, therefore, that intervention has to be reckoned with.

After hatching comes the ejection of the fellow-nestlings, and here I might lay stress on two points that have been insufficiently emphasized, I think, in the one or two descriptions I have seen of the process. One is that the young bird is not simply shot out of the nest by an upward heave—the impression that one is, perhaps, given; but that, except in a shallow nest, there is a display of the greatest *will* and *endurance*—Rodin might well take a blind young Cuckoo as the subject for a statue personifying those qualities. Pauses, during which both victim and murderer ask for food and probably, in nature, get it—as they did from me,—punctuated in my experiments what was sometimes a tedious operation, but one during which the young Cuckoo, as I have said elsewhere, did not give back a millimetre of the ground gained until it finally tumbled its victim over the side. Then comes the second point I have referred to. My Cuckoo, at any rate, on bringing about this result, would climb, backwards, right to the top of the nest if he were not there already, and, leaning over or even almost hanging down, would push, and push, and push, into empty air with his back until he was quite certain, apparently, that nothing remained to be pushed. It is to be supposed that the parents would often replace the nestling in the nest if it were found clinging to the outside, otherwise there would be no object in this final *coup-de-grâce*. Then the young Cuckoo would recover itself and climb down again into the nest. The very highly prehensile feet, useful

throughout, were, of course, quite indispensable to the performance of the part of the operation just described. The wings, as Mr. Craig describes, were used largely for steadying the victim on the Cuckoo's back and were very sensitive and useful. The stimulus to the commencement of the operation seemed always to be *movement* on the part of the fellow-nestling.

I have referred above to the coloration of the young Koel. If the explanation given for it in Mr. Pycraft's useful little book, 'The Story of Bird-life,' be the correct one—namely, that it resembles its male parent instead of, as is usual, the mother, because, were it not black, the foster-parents with black young "would promptly kill it on detecting the fraud,"—then it is obvious that some foster-parents continue to discriminate after the egg is hatched. This may be so, and it will be very interesting if it is, but the theory is one that ought to be tested carefully in the field by substitution of wrongly coloured nestlings, or eggs that will produce them, for those of the Crows, &c., that are the Koel's hosts. Possibly it has been so tested.

Finally, we come to the adult Cuckoo, with, in many cases, a close resemblance to some unrelated bird. I have referred to one explanation of these resemblances—that they enable the bird the more easily to insert its egg in its victim's nest. An alternative—or additional—possibility must not, however, be overlooked. It is that, as in most cases of mimicry, the resemblances will be useful in relation to enemies. The Drongo is likely to be a particularly useful model, not merely for its aggressive qualities, but for its nauseating effect on the eater, tested by me so far, however, only on mammals, not hawks. "Nauseousness" seems to me likely to be the model's qualification in nearly all cases of mimicry in birds that have been suggested as models, though "fighting-weight," such as hawks possess, will doubtless also tell. An argument against mimicry generally has been drawn from the extraordinary closeness of the resemblance of *Hierococcyx varius* to *Astur badius* and from the fact that the resemblance extends to the immature plumage.

I will touch on this in dealing, elsewhere, with my experiments on carnivorous animals. Meantime, I may say that it seems to me to tell against mimicry in relation to the host, but not against mimicry for protection from enemies.

Finally, we have the Cuckoo as a possible model for mimicry, suggesting that it, too, sometimes possesses nauseousness. I refer to the resemblance between the females of the Emerald Cuckoo and of *Campophaga nigra* and *hartlaubi*. It even extends to the bunched appearance of the rump, noticeable in the field. I am aware of the objections to the view that these and the other resemblances referred to here are real cases of mimicry and, up to a certain point, share in them myself, but I feel that they are probably strongly protective and that the element of real mimicry in them is probably considerable.

Major Meiklejohn's summary of known fact and of points on which further information is needed is both interesting and likely to be highly useful to investigators. In the one or two places in which the above remarks happen to have overlapped his statement, it has not been done with any idea either of "poaching" or of criticizing—though I think that the view that the Cuckoo bases its choice on egg-coloration requires careful testing. I have merely felt that it is sometimes suggestive to state things from slightly different standpoints. Elsewhere I have tried to suggest one or two additional points for investigation.

VIII.—Obituary.

ALFRED JOHN NORTH.

THE death of Mr. A. J. North, C.M.B.O.U., which took place somewhat suddenly from heart failure on 6 May, 1917, was briefly announced in the October number of 'The Ibis.'

Born on 11 June, 1855, at Melbourne, the second son of Henry and Mary T. North, of Moonee Ponds, Victoria,

young North was educated at the Public School and subsequently at the Grammar School, Melbourne. He had an inborn taste for ornithology, but was for some years engaged in business in Melbourne, where he was one of the original members of the Field Naturalists' Club. In 1878 he made the acquaintance of Ramsay, whom he only survived by five months, and who was at that time the Curator of the Australian Museum. A few years later he joined Ramsay in Sydney, where he was employed to arrange the Ramsay collection of birds and to prepare a catalogue of the eggs of the Australian Museum. About this time he was appointed assistant to the Curator, Dr. Ramsay, and subsequently, in 1891, Ornithologist of the Australian Museum, a post which he retained until his death.

The ornithological writings of Mr. North chiefly deal with the life-history and habits of Australian birds, especially of those which occur in the immediate vicinity of Sydney. His most important publication is undoubtedly the 'Nests and Eggs of Birds found breeding in Australia and Tasmania,' published by the Trustees of the Australian Museum at Sydney between the years 1901-1914. The work is in four quarto volumes and is a second edition, though entirely re-written, of a previous work published in 1889. An idea of its scope and value will be gained from the notice of the last part issued, to be found in 'The Ibis' for 1915 (p. 373).

Mr. North also wrote an account of the birds of the Horn Scientific Expedition in Central Australia, 1896, and of the birds collected by the Calvert Exploring Expedition in Western Australia, 1898. Many other contributions from his pen have appeared in the publications of the Australian Museum, the Proceedings of the Linnean Society of New South Wales, and the 'Victorian Naturalist,' as well as in 'The Ibis,' to which he sent several short papers from 1893 onwards.

For his ornithological work Mr. North was elected a Colonial Member of our Union in 1903, and he had the

previous year become a Corresponding Fellow of the American Ornithologists' Union, but he was never a member of the Royal Australian Ornithologists' Union as he had no faith in the work of his amateur contemporaries. This feeling was so strong that it detracted from the value of his work, as, rather than incorporate anything in his writings that he deemed doubtful, he ignored the work of most of his fellow Australians.

It was in the matter of the detailed study of the life-history of those birds especially which occur in the neighbourhood of Sydney that his best work was done, and his neglect of modern methods in nomenclature and taxonomy in no way detract from the value of these observations, and in many respects he was one of the best ornithologists that Australia has yet produced.

CECIL GODFREY RAWLING.

Though not a member of the Union, the death of Brigadier-General Rawling, C.I.E., C.M.G., by a casual shell on the 28th of October, 1917, on the western front cannot be passed over without notice in these pages.

Born in 1870 and educated at Clifton, Rawling received his first commission in the Somerset Light Infantry and proceeded immediately to India. He had a passion for high mountains and the exploration of the waste places in the world, and in 1903 he mapped over 40,000 square miles on the Tibetan border. He was an invaluable member of the Tibetan expedition of the following year, so that, when the Jubilee Expedition of the B. O. U. to explore the snow mountains of Dutch New Guinea was proposed and organized by Mr. Ogilvie-Grant under the leadership of Mr. W. Goodfellow in 1909, Captain Rawling (as he then was) was asked to go as Surveyor of the expedition on behalf of the Royal Geographical Society. On the return of Mr. Goodfellow through illness Rawling was appointed leader of the party, and though they failed to climb Mt. Cartensz they discovered a new pigmy race of natives, and made very valuable collections in all branches of

zoology. The story of the expedition was told by Rawling in his book, 'The Land of the New Guinea Pigmies.'

On his return home his mind reverted to the Himalaya, and the great ambition of his life was to climb Mt. Everest, which he believed could be done from the northern or Tibetan side. On the outbreak of the war Rawling was appointed to command one of the service battalions of his old regiment. He took his battalion to France in the spring of 1915, and had been fighting there with distinguished success until a stray shell killed him while talking to a friend just outside his Brigade Headquarters.

For his exploring work he was awarded the Gold Medal of the Royal Geographical Society only last year, and his death ends a career of great achievement and of still greater possibilities in the future.

Commander The Hon. R. O. B. BRIDGEMAN, R.N.

The following details of the death of Commd. Bridgeman, M.B.O.U., a notice of whose death appeared in 'The Ibis,' for last April (p. 247), recently appeared in the 'Times' and will be read with interest by his fellow-members of the B. O. U.:—

"Details of a series of adventures which befell Flight-Commander Edwin Roland Moon, D.S.O., R.N., of Southampton, who was at first reported killed in East Africa, but who is now a prisoner in the hands of the Germans, and Commander the Hon. Richard Bridgeman, D.S.O., R.N., who lost his life, have been received:—

"It appears from the story of a captured German merchant captain and from native sources that a seaplane carrying the two officers was forced to land in the delta of the Rufigi River owing to engine trouble. As they could not repair the damage the officers burnt their machine. Flight-Commander Moon swam across a stream which swarmed with crocodiles with a view to finding a boat or canoe, but failed in his quest. On the following day he again crossed the river, but was carried down stream by the

ebb tide before he could land, and had to force his way back through the mangroves. Apart from coconuts the officers had had nothing to eat or drink since leaving their station. At nightfall, after much weary marching, they discovered an empty house, and were able to make a raft on which they set off. Their only relief from the mosquitos was to dip their heads under the water. The coconut milk which they carried in bottles had turned sour by this time, and by the evening of the third day both were completely exhausted. Commander Bridgeman, indeed, was almost insensible.

“The tide carried the raft out to sea and the raft became waterlogged, so that Flight-Commander Moon had to support his comrade in his arms in order to keep the almost unconscious man’s head out of water. The two spent thirteen hours on the raft on the fourth day, and for at least nine hours were on the open sea. Again and again Commander Bridgeman was washed off the raft and rescued again by his brother-officer, until at last he died of exhaustion and exposure. During the afternoon of the fourth day the tide carried the raft back to within a short distance of the shore, and the survivor managed to regain the land. In his final struggle to shore his face, hands, and feet were severely cut by the rocks. A native conducted him to two Germans who were living near, and there he collapsed. He soon recovered, however, and is now quite well. Commander Bridgeman’s body was washed ashore a few days afterwards, and was buried by the Germans.”

IX.—*Notices of recent Ornithological Publications.*

Despott on Maltese Birds.

[Ornithological notes from the Maltese Islands (July–December, 1916). By G. Despott, M.B.O.U. *Archivum Melitense*, 1917, pp. 251–256.]

Mr. Despott, whose paper on the birds of Malta was published in ‘The Ibis’ last year, continues to record all ornithological occurrences of interest in the Maltese

Islands. The present contribution, dealing with the last half of the year 1916, is drawn up in diary form and mentions the arrival from the north of many migratory birds. An Egyptian Vulture and a flock of Oyster-catchers, both birds of rare occurrence, are mentioned as having been recently observed, the former in November, the latter in August.

Gladstone on Lord Lilford's Coloured Figures of British Birds.

[Handbook to Lord Lilford's Coloured Figures of the Birds of the British Islands. By Hugh S. Gladstone, M.A., &c., &c. Pp. 1-69. London (Bickers & Son), 1917. 8vo. Price 12s. 6d.]

This is a bibliophile's labour of love and must have cost Mr. Gladstone much time and patience to draw up. As is known to many ornithologists, there were two editions of Lord Lilford's well-known and justly prized "Coloured Figures." Both were issued in parts, and after a time the second edition caught up, so to speak, the first, and the last eight parts appeared simultaneously.

Mr. Gladstone has carefully worked out the rather complicated history of the two editions and gives us a table showing the exact date of issue of each part of the two editions, their contents, and the number of copies printed. Another table is in the form of an index indicating the name of the artist and lithographers of each plate and the part in which it appears. Out of 421 plates, 260 were drawn by Mr. A. Thorburn and 125 by the late Mr. J. G. Keulemans.

A third table gives some account of certain "suppressed plates" which were either not considered of sufficient merit or which had not been drawn from the correct bird. Some of these have got on the market and caused considerable confusion.

Any book-lover or ornithologist possessing a copy of Lord Lilford's work should certainly consult Mr. Gladstone's book if he is in any doubt as to the history of his particular copy.

Gyldenstolpe on the heel-pads of Birds.

[Notes on the heel-pads in certain families of Birds. By Nils Gyldenstolpe. Ark. f. Zool. Stockholm, vol. xi. no. 12, 1917, pp. 1-15; 16 figs.]

As is well known, some young birds have a thickened heel-pad on the proximal end of the tarso-metatarsus. Dr. Günther first called attention to this structure in the Wryneck in 'The Ibis' for 1890 (p. 411). Other writers have described similar structures in the case of other birds, and in this short paper Count Gyldenstolpe has collected together a short list of those species in which he has found this peculiarity. As would naturally be expected, the heel-pads are generally found in those birds which breed in holes in trees or on the ground, as the pads assist the young birds to move about. In some groups, such as the Toucans, Barbets, and some of the Woodpeckers, the pads are furnished with pointed tubercles which no doubt enable the young bird to obtain a greater leverage when moving about. In some others, such as the Rollers, Hoopoes, and Bee-eaters, the edges of the scales covering the pads are raised up and roughened. Many of these cases are described and figured by Count Gyldenstolpe in his interesting communication.

Gyldenstolpe on Malay Birds.

[On Birds and Mammals from the Malay Peninsula. By Nils Gyldenstolpe. Ark. f. Zool. Stockholm, vol. x. no. 26, 1917, pp. 1-31.]

This paper contains an account of two small collections of birds made by Count Gyldenstolpe's Dyak collector in the Malay Peninsula. The first, consisting of 44 species, was formed at Bukit Tangga, a mountain station at about 1300 feet elevation, in the State of Negri Sembilan. It contained no novelties or anything of special interest. The second collection, a rather larger one with representatives of 90 species, was formed in the low country near the mouth of the Perak river, and is now in the Museum at Stockholm. One species, *Locustella certhiola*, is recorded for the first time in the Malay Peninsula. It is, as would

be expected, a winter visitor only and breeds in Siberia. It could hardly be hoped, after the thorough investigations made by Messrs. Robinson and Kloss, that much remains for other collectors in the low country of the Malay Peninsula.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. vi. pt. 5, pp. 373-444, pls. 303-316. London (Witherby), September 1917. 4to.]

Mr. Mathews's book keeps on the even tenor of its way, and furnishes us with well-chosen compilations of the life-histories of species, accompanied by excellent illustrations. The present part deals with ten of the Parrots.

Of these *Barnardius zonarius* (Shaw and Nodder) is shown to be identical with *semitorquatus* of Quoy and Gaimard, while *occidentalis* is classified merely as one of six subspecies. *Purpureicephalus* is upheld—chiefly on account of its peculiar long bill—as a distinct genus, with one species (*spurius* of Kuhl) synonymous with *pileatus* of Vigors and *rufifrons* of Lesson. The subspecies *carteri* is discarded.

Next comes a series of small but beautiful Parrakeets, beginning with *Psephotus* which has two species, *hamatopus* and *varius*. The former is permitted to keep a subspecific form, *virescens*, while the latter has four, *orientalis* and *ethelæ* being new and *rosinæ* being cancelled. The name *varius* must stand, as *multicolor* is preoccupied and *dulciei* antedated; moreover, a new subgenus *Clarkona* is proposed for this bird.

Northiella, founded for *Platycercus hamatogaster* of Gould, has caused considerable trouble, but, finally, *xanthorrhous* and *hematorrhous* of Bonaparte prove not specifically separable, though the latter with *pallescens* and *alter* may still be allowed to hold subspecific rank.

Psephotellus pulcherrimus, with its form rightly named "*dubius*," is probably extinct; *P. chrysapterygus* has one subspecies (*dissimilis*) allowed it, which used to be considered a distinct species. The names *P. blaauwi* and *P. cucullatus* were given to birds from the same locality as *dissimilis*.

Neopsephotus is noted as peculiar for its crepuscular habits, while the single subspecies *pallida* is suppressed. Finally, *Neonanodes* has four species, of which *chrysogaster* Lath. (= *aurantia* Gould), with two subspecies, and *chryso-stomus* Kuhl (= *venustus* Temm.), also apparently with two, are included here.

Peters on the birds of Santo Domingo.

[Birds from the northern coast of the Dominican Republic. By James L. Peters. Bull. Mus. Comp. Zool. Cambridge, Mass., lxi. 1917, pp. 391-426.]

Although the Island of Hispaniola, which is now divided politically into two independent Republics—that of the French-speaking Haiti to the west and the Spanish-speaking Santo Domingo to the east,—was discovered by Columbus and was the first settled land in the New World, its birds are less known perhaps than those of any other West Indian Island.

In pre-Linnean days, however, a M. Chervain collected a considerable number of the native birds and sent them to M. de Reamur in Paris, where they were described by Brisson. These formed the basis of a good many names found in Linnæus' and Gmelin's Systems. In the last few years a good deal of ornithological exploration by American collectors has been done and some very interesting new forms have been described (see Ibis, 1917, pp. 256, 438).

Mr. Peters, the author of the present paper, spent about two months of the winter of 1916 on the northern coast of S. Domingo and made very considerable collections for the Museum at Cambridge, Mass. Ninety-two species are listed, with field-notes and native Spanish names. One new subspecies, a Black-collared Swift (*Streptoprocne zonaris melanotis*), described in the Proceedings of the New England Zoological Club, was discovered, and the form of the Golden Warbler of the island, shown to be a well-marked race, must bear the name *Dendroica petechia albicollis* (Gmel.).

There are also a number of other remarks and rectifications of taxonomic interest as well as the field-notes.

Roberts on South African Birds.

[Ornithological Notes. By Austin Roberts. Ann. Transvaal Mus. v. 1917, pp. 246-262.

Descriptions of a new species and genus of Flycatcher from East Africa and two new subspecies of Guinea-Fowls from South Africa. Id. *ibid.* vi. 1917, pp. 1-3.]

The first portion of the first paper quoted is occupied with a somewhat severe criticism of Mr. Claude Grant's action in a recent paper published in our pages (*Ibis*, 1915) on Captain Cosens's East African collection, in which some of Mr. Roberts's proposed new forms are discredited. Mr. Roberts recognizes four Scops Owls in South Africa—one from Cape Colony, one from the Orange Free State and north-east Cape Colony, one from the Transvaal, and one from Portuguese East Africa. Mr. Grant believes that there is only one form which varies so much individually that no constant character can be found warranting the recognition of separate races. A final decision on this question can only be made, of course, by careful comparison of a large amount of material, and even that examined by Mr. Roberts himself hardly seems sufficient in the case of such a notoriously difficult group as the Scops Owls. Other differences of opinion exist between Mr. Roberts and Mr. Grant in regard to *Lophoceros nasutus maraisi* and subspecies of *Irrisor* and *Rhinopomastus* recently described by the former writer. Mr. Claude Grant is now on service in East Africa, but later on when he comes back to England he may perhaps be able to defend his position in these matters.

In a second note Mr. Roberts informs us that *Vinago calva* and *Francolinus hartlaubi* have recently been obtained by Lieut. Finch-Davies at Otavi in the north of the South-west African Protectorate. These species, though previously recorded from southern Angola, have not hitherto been noticed within South African limits.

In another note three new subspecies are described—*Mirafr africanooides harei*, Damaraland, *Phyllastrephus terrestris rhodesiae*, N.W. Rhodesia, and *Andropadus importunus noomei*, N.E. Transvaal; while the description of *Spinus symonsi*, previously printed on a separate unpagged slip, is reprinted with additional matter.

A final note is of great interest and deals with the parasitic habit of some South-African Weavers and Finches.

It appears to us that a new word is required to denote the habit now known to be prevalent in several groups of birds of laying their eggs in the nests of other species. Perhaps Coccygism would meet the case. At any rate, Mr. Roberts seems to have proved without doubt that the Pin-tailed Widow-bird (*Vidua serena*) and Rendall's Seed-eater (*Anamolospiza imberbis*) should be included in this category, and in the latter case he is actually able to give a photograph of the young Seed-eater being fed by a pair of Black-chested Warblers (*Prinia flavicans*) who acted as foster-parents; his observations on this matter are full of interest.

The second paper quoted contains a description of *Chloropetella suahelica*, gen. et sp. nov., for a little Flycatcher nearest to *Chloropeta*, but differing in its narrower and more decurved bill and longer and more numerous rictal bristles. The type, and apparently the only specimen, was obtained by Mr. Roberts himself at Myiai, an outpost some forty miles south-west of Dar-es-Salaam, on the coast of what was German East Africa.

In the same note *Numida papillosa damarensis* from Windhuk, S.W. African Protectorate, and *Guttera edouardi symonsi*, Karkloof, alt. 3,500 ft., Natal, are described as new subspecies.

Shufeldt on a fossil bird from Colorado.

[Fossil Remains of what appears to be a Passerine Bird from the Florissant shales of Colorado. By R. W. Shufeldt. Proc. U.S. Nat. Mus. vol. 53, 1917, pp. 453-455, pls. 60-61.]

The fossil which Dr. Shufeldt here describes consists of the impression of the pelvic region and a limb-bone of a

bird. It appears to be referable to the Order Passeres, and the author compares it with a Purple Grackle (*Quiscalus purpureus*), to which it comes near in size, but wisely does not give it name as its affinities are so uncertain.

It was found by Prof. Cutler, of Denver University, at Florissant in the Rocky Mountains, where there is a deposit of oily shales from which large numbers of insects and plants have been obtained and described. The beds are of late tertiary age.

White on the Birdlife of the South Australian coasts.

[The Cruise of the 'Avocet' in search of Skuas and other things. By Capt. S. A. White, M.B.O.U. Pp. 1-68; many photos. Adelaide. sm. 8vo.]

In this booklet Captain White gives a popular account, reprinted from the 'Register,' an Adelaide newspaper, of several trips among the islands and harbours of Spencer and St. Vincent Gulfs, which form two deep indentations on the South Australian coasts. He was the guest of his friends the Messrs. Rymills, in their motor-yacht 'Avocet.'

Among other interesting places visited was the rookery of the Mutton-bird (*Neonectris tenuirostris brevicaudus*) on Althorpe Island, where thousands of these Petrels breed. Some interesting details are given of their habits at this time.

The most important result of the voyage was perhaps the taking of the Arctic Skua (*Stercorarius parasiticus*) for the first time in South Australian waters. It had only previously been noticed in Australian waters on one or two occasions. It was also proved by the examination of their stomachs that the Cormorant or Shag (*Hypoleucus varius hypoleucus*) does not consume edible fish, and should not therefore be ruthlessly destroyed as has been done hitherto.

The Auk.

[The Auk. A quarterly journal of Ornithology. Published by the American Ornithologists' Union. Vol. xxxiv. for 1917.]

The volume of the 'Auk' for last year consists of over

500 pages and contains much to interest Old World ornithologists, though naturally a good deal of space is occupied by local lists and records which appeal more to the members of the A. O. U.

Among the faunal papers are those of Major Allan Brooks, now serving in France, on the birds of Chilliwack in British Columbia, of H. L. Stoddard on the birds of Wisconsin, of Messrs. Philipp and Bowdish on the birds of New Brunswick with photographs of the nests of several of the rarer Warblers, of Messrs. Nichols, Murphy and Griscom on the birds of Long Island, and of C. A. Gianini on Alaskan birds; while Mr. W. P. Lowe, M.B.O.U., who has done so much good collecting work in Africa and elsewhere during the past few years, contributes some reminiscences of birdlife in Colorado, where he was residing from 1888 to 1901.

The most interesting new species is a Hawaiian Finch *Telespiza ultima*, described by Mr. W. A. Bryan from Nihoa, an outlying and very inaccessible island of the Hawaiian group between the main group and Laysan. It is probably the last member of the intensely interesting Hawaiian avifauna that remains unknown; hence the specific name. Other new forms described are *Buteo platypterus iowensis* Bailey, a dusky form of the Broad-winged Hawk from Iowa, *Sturnella neglecta confluenta* Rathburn from the coast-region of Washington State, and *Agelaius phœniceus grinnelli* Howell from Salvador in Central America.

Mr. H. Oberholser has a number of articles on taxonomic points. Dealing with the White-breasted Nuthatch, the name of which is founded on Catesby's description from Carolina, he shows that the Nuthatch of South Carolina is more closely allied to the Florida form, which is distinct from the race in north-eastern United States which has hitherto been known as *Sitta c. carolinensis*, and he proposes to call the north-eastern race *Sitta c. cookei*, after the late Prof. W. W. Cooke. A series of articles deal with the status, relationships, and nomenclature of various North American

birds. In one of these he rejects the generic name *Bannermania* recently proposed by Mathews and Iredale for a Pacific Petrel, as well as *Cymochorea* Coues, which was revived by the same authors. He also discusses and criticises the changes proposed by Lord Rothschild and by Mathews & Iredale in the matter of the names of the Frigate-birds and Petrels.

With regard to the Waxwing (*Ampelis* or *Bombycilla garrulus*), which has been hitherto generally treated as a widely ranging but unvarying species from western Europe through Asia to eastern North America, Oberholser believes that he can distinguish three races—a darker European (*B. g. garrulus*), a somewhat paler central Asian (*B. g. centralasiæ* Poljakov), and a still paler and more greyish American (*B. g. pallidiceps* Reichw.). He also controverts the decision of the Committee of the B. O. U. in regard to the usage of the generic name *Ampelis* for the Waxwing, and believes that he is correct in the use of *Bombycilla*. A further examination of this question is desirable so that a definite and final conclusion can be reached acceptable to all ornithologists.

During his trip to Labrador in the summer of 1915, Dr. C. W. Townsend obtained a pair of Chickadees or Tits which he found to be a hitherto undescribed race and named *Penthestes hudsonicus nigricans*. In the winter of 1916-17 a great southward migration of Chickadees took place into the region about Boston, and Dr. Townsend had the satisfaction of recognizing his Labrador form among the migrating birds. In a short paper relating this he comments as follows:—"It is not often that the discoverer of a new race in a distant land is so fortunate as to have that race return his visit in his own home."

A paper on rather novel lines is that of Mr. H. Mousley, who has made a number of detailed observations on second nestings and laying. He finds that when the first nest and eggs are taken, about 70 per cent. of the birds make a second nest and about 30 per cent. two subsequent nests; that the new nest is made and the second clutch laid, on an average

about eleven days after the first set is taken ; that the second and third nests are placed in similar situations to the first and on an average about 66 yards away ; that the second and third clutches of eggs are similar in shape, colour, and markings to the first, but frequently differ in size and are generally smaller. Mr. Mousley's observations were made chiefly on (American) Warblers in the southern part of the Quebec Province of Canada.

The fact that the horny lining of the gizzard in birds is periodically shed and regurgitated was first pointed out by the late Mr. Bartlett, in the Zoological Gardens in London, in the case of the Hornbills. Mr. McAtee contributes a paper on this subject dealing especially with the case of the ducks, in which he believes this phenomenon is of frequent and regular occurrence.

There are many other contributions some of which have been already noticed in our pages, while others must be passed over, as this notice has already been unduly lengthy. Finally, we must mention that the present volume contains portraits with appropriate memoirs of three recently deceased Fellows of the American Ornithologists' Union—D. G. Elliot, W. W. Cooke, and F. E. L. Beal.

The Avicultural Magazine.

[The Avicultural Magazine: being the Journal of the Avicultural Society for the study of foreign and British birds in freedom and captivity. Edited by Hubert D. Astley, M.A., &c., &c. Third Series. Vol. viii. November 1916 to October 1917.]

With the completion of this volume Mr. Astley, who has edited the Magazine for nearly five years, resigns his task. All the Members of the Society, as well as others with a love for birds and bird-keeping, will regret that he has found it necessary to take this step. He has most ably and indefatigably carried out a most difficult task in keeping up the standard of the magazine through the last three difficult years of war. We wish him a well-earned repose and hope that his successor will be able to maintain the magazine at the same pitch of excellence.

The present volume contains a number of contributions filled with practical hints and advice on the care and health of birds in captivity from Messrs. Amsler, A. J. Butler, C. B. Smith, Teschemaker, Miss Alderson, and many another.

Mr. St. Quintin sends an interesting account of his successful efforts to get his Little Bustards to breed, though he has never yet been able to induce his Great Bustards to do so. Since 1886 he has never been without examples of the latter in his aviaries in Yorkshire. He states that he believes *Otis tetrix* is monogamous and that it lays three eggs only. The young of both sexes are indistinguishable from the female during the first year, and the young males begin to show their distinctive markings at about fifteen months.

Another well-known aviculturist, Mr. Blaauw, has been successful in breeding the South American Black-faced Ibis, *Theristicus melanops*; one of the pair had been brought to Europe by Mr. Blaauw himself from Punta Arenas in the Straits of Magellan, and he gives a photograph of the young bird.

From the pen of Lady William Cecil there is an article on the American Warblers, a group of birds seldom seen in captivity and little known to bird-lovers in the Old World, but great favourites among our American cousins for the beauty of their plumage and song. A further paper deals with the Greenlets or Vireos, also a sweet-voiced family.

The coloured plates of the present volume illustrate *Xanthoura cyanocapilla*, the Guatemalan Jay, with a note by the editor, *Bernicla ruficollis* from a picture in the possession of the Duchess of Bedford, also with a note by the editor, and, finally, on one plate, two rare South American birds, *Calliste cyanopygia* and *Compsocoma notabilis*, painted by Mr. Rowland Green from living examples in the aviary of Mr. E. J. Brook.

Dr. Hopkinson has compiled a useful list of the published coloured plates of Parrots arranged in systematic order, and the new editor, Mr. Renshaw, has two articles on the

Secretary-Bird and Mantell's Apteryx in which he deals with their avicultural history. Finally, we must mention a contribution from Sir William Ingram containing the diary of the caretaker employed by him to look after the Great Birds of Paradise on the island of Little Tobago in the West Indies. Sir William believes that these birds, introduced by him eight or nine years ago, have now become completely acclimatized and are increasing by natural means.

The Emu.

[The Emu: official organ of the Royal Australasian Ornithologists' Union. Vol. xvi. July 1916-April 1917.]

Some of the numbers of our Australian contemporary have not reached us so punctually or regularly as usual. They have suffered perhaps from "enemy action"; hence the delay in noticing the last completed volume, which is edited by Messrs. J. A. Leach and C. H. Croll; Mr. C. Barrett, whose name appears only on the first number as joint-editor, has joined the Australian Expeditionary Force. We wish him good luck and a safe return.

Perhaps the longest and most important paper in the present volume is one in which Mr. H. L. White gives an account of an expedition organized by him and undertaken by Mr. William M'Lennan along the northern coast of Australia. Leaving Thursday Island in his cutter 'Avis' on 29 June, 1915, Mr. M'Lennan coasted along the Gulf of Carpentaria and beyond, nearly as far as Port Essington. He landed at many places and collected birds and eggs, and explored a vast heronry situated at the mouth of the Roper river, never before visited by an ornithologist. Mr. M'Lennan did not get back to Thursday Island till May 1916, and was then suffering from a very severe attack of fever and beriberi. Two papers deal with the expedition, one containing M'Lennan's journal illustrated with a map, the other a list of the species obtained.

Among other faunal papers are two by Mr. W. B. Alexander on birds noticed at Bremer Bay on the southern

coast of West Australia, a spot never previously visited by an ornithologist and quite out of the way of ordinary travellers. A second paper deals with some uncommon birds recently observed near Perth.

Some good field-notes, in each case accompanied by fine photographs, are given by Mr. A. H. Chisholm on the three species of *Pachycephalus*, by Miss Fletcher on *Porzana immaculata* in Tasmania, and by Mr. A. Tullock on the Penguins of Macquarie Island far away to the south, where a wireless station was erected for the benefit of the Mawson Antarctic Expedition. Four species of Penguin inhabit the island—the magnificent King (*Aptenodytes patagonica*), the Rock-Hopper (*Pygoscelis papua*), the Royal (*Catarrhactes schlegeli*), and the Victoria (*C. pachyrhynchus*). Interesting notes and good photographs accompany this article.

The new forms described are as follows :—*Malurus lamberti dawsonianus* H. L. White, from Dawson River, Queensland; *Ptilotis albilineata* H. L. White, King River, Northern Territory; *Climacteris waitei* S. A. White, from Coopers Creek district, South Australia; and *Acanthiza winiamida* Wilson, from the desert region of Victoria.

A novel subject is dealt with by Dr. Shufeldt of Washington in the matter of fossil birds' eggs. He figures and describes five so-called fossil eggs preserved in the United States National Museum, two from the United States and three from France, and all apparently of Oligocene age. It is, of course, impossible to make any guess even at the identification of such eggs; indeed, it is not always possible to prove that they are eggs at all, but it is doubtless a subject which has an opening for future study and which may some day carry us further in our knowledge of ancient bird-life.

A word must be said for the illustrations of the 'Emu.' There are a large number of photographs reproduced and some of these are excellent; we very specially draw attention to the Black Swans and nest on the Hacking River, N.S.W., taken by Mr. H. Burrell. There are also coloured plates of

Barnardius z. myrtæ and *Acanthiza marianæ* discovered by Captain S. A. White in central Australia in 1913 and 1914, and of *Ptilotis albilineata*, Mr. H. L. White's recently described species already alluded to.

List of other Ornithological Publications received.

- OUDEMANS, A. C. Mededeelingen door Dr. A. C. Oudemans over zijne "Dodo-Studiën," gedaan in de Vergadering der "Nederlandsche Ornithologische Vereeniging," gehouden te Winterswijk op 9 Juni, 1917.
- Annals of the Transvaal Museum. (Vol. v. pt. 4; Vol. vi. pt. 1. Pretoria, 1917.)
- Avicultural Magazine. (Third Series, Vol. ix. Nos. 1, 2. London, 1917.)
- Bird-Lore. (Vol. xix. No. 5. New York, 1917.)
- Bird Notes. (New Series, Vol. viii. Nos. 9-11. Ashbourne, 1917.)
- British Birds. (Vol. xi. Nos. 5-7. London, 1917.)
- Bulletin de la Société Zoologique de Genève. (Tome ii. Fasc. 10-12. Genève, 1917.)
- The Condor. (Vol. xix. No. 5. Hollywood, Cal., 1917.)
- The Irish Naturalist. (Vol. xxvi. No. 10. Dublin, 1917.)
- Journal of the Bombay Natural History Society. (Vol. xxv. No. 2. Bombay, 1917.)
- Journal of the Federated Malay States Museum. (Vol. vii. pt. 3. Singapore, 1917.)
- Revue Française d'Ornithologie. (Nos. 102-4. Orleans, 1917.)
- The Scottish Naturalist. (Nos. 67-72. Edinburgh, 1917.)
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X.—*Letters, Extracts, and Notes.*

(Plate IV.)

Gulls' Eggs.

DEAR SIR,—I am glad that Mr. Jourdain has corrected what appears to have been an error on my part in this connection in 'The Ibis' for 1917 (p. 272). Living at "the back of beyond" and far from museums and oologists, I relied rashly, but, I thought, safely, on the literature of the subject I happened to possess myself.

The suggestion which I used the Gulls to illustrate, together with the arguments generally of the section in which it occurred, were merely intended to suggest that the actual existence of variability in eggs was not incompatible with the possible presence of a factor, the tendency of which would be to make for uniformity. Several of them, together with the necessity for them, would fall to the ground should it be shown that preference is rare in egg-eaters. If, on the other hand, it is common, they would require to be taken into consideration.

Yours truly,

Gungunyama,
S. Rhodesia,
13 July, 1917.

C. F. M. SWYNNERTON.

Ornithology of Malta.

SIR,—In the second part of Mr. G. Despott's interesting and valuable paper on the Ornithology of Malta, some evidence is quoted under the heading of *Falco peregrinus peregrinus* of the breeding of this bird in the Maltese group (p. 474). That the Continental race of the Peregrine visits Malta during the winter months is an admitted fact, but it is much more probable (and is practically certain) that the breeding stock belong to the smaller Mediterranean race, *F. peregrinus brookei*, which is known to breed in Corsica, Elba, Sardinia and many other of the Mediterranean islands. On the other hand, on p. 475, for *F. peregrinus peregrinoides* read *F. p. brookei*, the former subspecies being the resident form in northern Africa, north of the Sahara. I would also add that the Maltese Jackdaw is *Colarus monedula spermologus*, according to the nomenclature of Hartert's Vög. pal. Fauna which is followed elsewhere in the paper, the name *C. monedula monedula* being restricted to the Scandinavian form.

The Shag reported by Sergeant Mackay (p. 499) must have belonged to the Mediterranean race, *P. graculus desmaresti*, rather than to the form inhabiting the North Atlantic and the North Sea, *P. graculus graculus*. It is

somewhat remarkable that this bird should be so common on the coasts of Sardinia and Corsica and in the Adriatic, and yet be unknown or almost so in Malta.

Yours truly,

2 November, 1917.

F. C. R. JOURDAIN.

Birds of Egypt.

SIR,—I have read with great pleasure Captain A. W. Boyd's paper on "Birds in the Suez Canal Zone and Sinai Peninsula," which is especially interesting to me, as I was also stationed in the Suez Canal Zone for some six weeks in February and March, 1916.

My observations, so far as they go, confirm Captain Boyd's remarks on the distribution of the various species, except in the case of the Common Snipe (*Gallinago caelestis*), which was not uncommon in the marshes along the south-west shores of Lake Timsah, where I shot several. Quail (*Coturnix communis*) were also found in considerable numbers in these marshes and in the fields near them, and during their northward migration, in March, afforded us some excellent sport.

I saw two Pratincoles (*Glareola pratincola*) towards the end of March near the native village south of Ismailia. This species was not observed east of Alexandria and Cairo by Captain Boyd.

A pair of Stone-Curlews (*Ædicnemus* sp.?) had a nest containing two eggs in the desert near the point at which the Canal enters Lake Timsah from the north, and I saw the birds there frequently. When riding along the bank of the Freshwater Canal I also observed several pairs of Pied Kingfishers (*Ceryle rudis*) which were almost certainly nesting.

The Hoopoe (*Upupa epops*) was seen once or twice among the trees near Ismailia. Redshank (*Totanus calidris*) were often heard calling on the mud-flats in the Lake.

Yours truly,

B. E. F., France,

T. N. KENNEDY, Capt. R.A.

7 November, 1917.

The late Lieut. G. V. Webster.

SIR,—The English Mail has brought me the sad news of the loss of a very valued friend in Mr. Godfrey Vassell Webster, Grenadier Guards, who was killed on the Western front on the 4th of August. No doubt you will publish an official biography in 'The Ibis,' but as one of his seconders when he was elected to the Union this year, may I give my tribute to a good soldier, a good friend, and a good naturalist.

I have known Webster since he was a small boy (and I was not much older myself), and while on leave recently in England was able to see something of him, so far as his military duties allowed; we spent some days together shooting or collecting in East Sussex, and I had ample opportunity of learning that the boyish naturalist had grown into a first-rate observer; his knowledge of English birds was considerable, both as regards their plumages, habits, and racial forms, and as a taxidermist he must have been almost without equal for his age. Of his personal attributes there is no need to write; they are known and admired by all who knew him.

Yours truly,

HUGH WHISTLER.

Ludhiana, Punjab,
27 September, 1917.

Australian Parrots.

SIR,—In the last number of 'The Ibis' was a very interesting letter from the Marquis of Tavistock regarding Australian Parrots as he knows them in captivity. I value such criticisms as they assist the rectification of erroneous ideas on both sides, and therefore put on record the facts as disclosed by the examination of bird-skins concerning his remarks.

"No mention is made of the striking difference in the colour of the eye in male and female Roseate and Leadbeater's Cockatoos." If there be any difference in colour in the male and female it is not constant in nature *for the species*

but may be in some subspecies. Thus the eyes are recorded the same colour in the sexes by my experienced collectors, sometimes one colour, sometimes the other. Consequently I could not lay any stress upon a non-existent feature *as regards the species*. I am emphasising this remark as it is very possible that the eye-coloration may be constantly different in a restricted area and diagnostic as a subspecific feature.

"No mention is made of the 'spatules' of the primaries in the male Queen Alexandra's Parrakeet." This is a generic character of the genus *Northipsitta*, and is fully discussed in the generic diagnosis.

"The females of all *Platycercus* and *Barnardius* Parrakeets are inferior to adult males of the same race in the size of the head and beak, and some are duller in colour and slightly different in markings." The difference in the size of the head cannot be seen in bird-skins, and the difference in the size of the beak is so small that it is not shown by measurements and moreover is not a constant feature, the size of the bill varying with age. The difference in coloration cannot be utilised as a striking feature as the female develops the perfect male plumage with age, so that the most highly-coloured female is scarcely any duller than the most brightly-coloured male, while it is, of course, brighter than the majority of fully-plumaged males. There can scarcely be any doubt that in nature the coloration does develop with age.

"The statement that the adult female Stanley (yellow-checked) Parrakeet resembles the male is quite incorrect. The female differs from all other *Platycerci* in retaining all her life a plumage very similar to that of the young." Notwithstanding the remarks above given based on a sight of nearly four dozen Stanley's, the adult female *in nature* is quite like the adult male. I have examined many more than "four dozen" skins, and my facts are right as regards *nature* and are confirmed by such skilled bird-observers as Mr. F. L. Whitlock and Mr. Tom Carter. If *in captivity* the female retains the immature plumage while the male

develops a different coloration, we have another of the extraordinary cases where birds in captivity do not follow the laws of nature. It may be that the birds *in captivity* all came from one district and consequently show a subspecific feature which has not been observed in the bird-skins I have examined.

Lord Tavistock's belief that all *Platycercine* Parrakeets take only fourteen months to assume adult plumage may be quite true for birds *in captivity*, but it is just as certainly not applicable to these birds in the wild state. It may be here explained that I am using the words *in captivity* to include birds *at liberty* in England. I gave Kearthland's results that at least two years elapsed in one case, and this could be easily confirmed by Australian ornithologists.

"The classification of *Platycercus adalaidæ* as merely a local race of *Platycercus elegans* seems hardly justifiable, as it bears no closer resemblance to that bird than to *P. flaveolus*." I agree with Lord Tavistock that this form is almost exactly intermediate between *elegans* and *flaveolus*, as Mr. Edwin Ashby has just shown another apparently connecting link, and the correct status of *adalaidæ* is at present in doubt. As regards coloration, Ashby has named a form *P. elegans fleurieuensis* which connects (apparently) *P. adalaidæ* and *P. elegans*, *P. subadalaidæ* seems intermediate between *P. adalaidæ* and *P. flaveolus*. But typical *P. flaveolus* lives and breeds along with typical *P. elegans*, and these differ in every detail. It seems at present that *P. adalaidæ* should be associated with *flaveolus* rather than with *elegans*, but further research is necessary.

I would emphasise the fact that though I apparently controvert the statements put forward by Lord Tavistock in his letter, I have only done so on the facts before me and for the purpose of advancing our knowledge of these birds. I really am very grateful for his interesting letter as it may be the means of adding to our knowledge, and it is possible that his statements may prove accurate in the case of certain subspecies, though not constantly true for the species as a whole. If this were proven, we should have

advanced a step, while if his note concerning the plumages lead to the recognition of subspecies not otherwise determined, we may through them delve into the history of the evolution of the species.

I would refer those interested in this subject to my paper in the present number concerning these Parrots, which was in the hands of the Editor before I saw Lord Tavistock's letter.

Yours, &c.,

GREGORY M. MATHEWS.

Foulis Court,
Fair Oak, Hants.
29 November, 1917.

The Green Sandpiper.

SIR,—Concerning your editorial note to my paragraph on the Nesting of the Green Sandpiper in Great Britain, to the effect that "Until eggs and parents are taken and identified, we feel that we must regard the breeding of the Green Sandpiper in Great Britain as unproven," may I draw your attention to Rule 7 in the Rules of the B. O. U. ? Here it states that if any Member "shall have personally assisted in or connived at the capture or destruction of any bird, nest, or egg in the British Isles, by purchase or otherwise, likely, in the opinion of the Committee, to lead to the extermination or serious diminution of that species as a British bird, the Committee shall have power to remove that gentleman's name from the List of Members."

Had I done as your editorial suggested, simply to convince sceptical fellow-ornithologists, I should probably have been so treated, and should have well deserved it.

Surely, Sir, when the young, quite unable to fly, are seen with their parents (by three witnesses), it is proof enough of their having been hatched there, without having to slaughter one or all of them to prove it?

Yours, &c.,

H. W. ROBINSON, M.B.O.U.

Lancaster.
30 November, 1917.

Third Oological Dinner.

The third Oological Dinner was held at Pagani's Restaurant on Wednesday, September 26, and was attended by thirty-two guests. In the unavoidable absence of Lord Rothschild, Mr. R. W. Chase acted as Chairman.

The subject illustrated by the exhibitors was Erythrism, and a wonderful collection of "red" eggs was shown, among which may be specially mentioned Mr. Massey's series of eggs of *Larus argentatus* and *L. marinus*.

Mr. E. C. STUART BAKER read a short address on the subject (see *antea*, p. 68), and exhibited a fine series of Indian erythristic eggs.

Mr. R. W. CHASE exhibited the following:—

Lapwing (*Vanellus vanellus*): Clutch of 4, dirty white ground with a very few dots and small brown blotches (Dorset); 4, very elongated eggs of most abnormal shape (Yorks.).

Woodcock (*Scolopax rusticola*): 4, pale ground, with reddish-brown caps at larger ends (Wyre Forest).

Oyster-catcher (*Hæmatopus ostralegus*): 3, dark reddish-brown ground, with bold markings (Donegal).

Redshank (*Tringa totanus*): 4, with dark reddish-brown ground (Dorset).

Sandpiper (*Tringa hypoleuca*): 4, with ochreous-red ground (N. Wales).—Br. Birds, vii. p. 255.

Ringed Plover (*Charadrius hiaticula*): 4, with unusually dark ground and bold markings (Norfolk).

Snipe (*Gallinago gallinago*): 4, three eggs with greenish-white ground, scantily marked, the fourth with brown ground and dark cap at larger end. Probably unique. (S. Wales.)

Yellow Bunting (*Emberiza citrinella*): 5, nearly covered with reddish mottling and a few characteristic markings (Salop); 4, white unmarked (Salop).

Corn Bunting (*Emberiza calandra*): 5, white, a few fine brown spots at larger end (Durham); 4, dark ground, with cloudy red and dark brown markings (Lincs.).

Blackbird (*Turdus merula*): 3 erythristic and 1 blue set. Also erythristic eggs of Tree-Pipit, Spotted Flycatcher, Chaffinch, Red-backed Shrike, and Robin.

Mr. E. P. CHANCE showed very fine series of eggs of Red-backed Shrike (*Lanius collurio*) and Tree-Pipit (*Anthus trivialis*) from his collection.

Dr. E. HARTERT showed the following eggs from the Tring Museum:—

1 Herring-Gull (*Larus a. argentatus*) from North Cape: creamy-white with reddish-brown spots.

2 reputed eggs of Iceland Gull (*Larus leucopterus*) from "Labrador": pale red-brown ground, one with large chestnut-red patches, the other finely spotted. Possibly *L. argentatus*, or if *L. leucopterus*, the locality given is incorrect.—Br. Birds, vii. p. 257.

3 eggs of *Sterna bergii velox* from the Persian Gulf, with ground-colour varying from rich reddish-cream to light creamy, scribbled and spotted with blackish-brown and purplish-grey shell-markings.

1 egg of *Gallus domesticus*, deep brown-red.

1 *Sterna fuscata infusata* (Kermadec Is.): reddish-cream, with dark brown blotches and underlying pale bluish-grey spots.

3 *Vanellus vanellus*: one brownish-rufous, two creamy-rufous ground, markings normal.

2 *Otis tetras orientalis* (Sarepta): one reddish coffee-brown, the other similar but very much lighter, with faint darker brownish patches.

Corvus (*Heterocorax*) *capensis*. A series from S. Africa, illustrating constant specific erythrism, unique in the family Corvidæ, though abnormally erythristic eggs of various species occur rarely.

A clutch of eggs of *Rhamphocorys clot-bey* from the Oued N'ca. W. Sahara, illustrating constant generic and specific erythrism in the family of Alaudidæ.

3 very pronounced erythristic eggs of the red type of *Sylvia a. atricapilla*.

1 *Sylvia c. communis* (Germany), reddish-cream with

rufous and dark brown spots and purplish-grey shell-marks.

1 clutch *S. undata* (Spain), of a very pronounced reddish type.

1 clutch *S. m. melanocephala* (Algeria), with an egg of *Cuculus canorus minor*. Not only are the eggs of the Warbler of the reddish type, but the Cuckoo's egg is pale cream-colour with faint reddish-brown spots.

The Rev. F. C. R. JOURDAIN exhibited the following clutches :—

Pica pica pica. Clutch with 2 erythristic eggs, the rest normal (Derbyshire).—Br. Birds, vii. p. 247.

P. pica mauritanica. Clutch with tendency to erythrism (Morocco).

Coccothraustes coccothraustes. Set with rich brown ground (Essex).

Emberiza cioides ciopsis. Erythristic clutch (Japan).

Lanius senator badius. Rich erythristic set (Corsica).—Br. Birds, vii. p. 250.

L. senator senator. Erythristic set (Spain).

Locustella fluviatilis. Strongly erythristic clutch (Hungary).

Sylvia communis. Red set (Leicestershire).—Br. Birds, vii. p. 252.

S. undata undata. Strongly marked red set (Spain).

Turdus aureus. Set with brownish-red ground, almost uniformly marked (Japan).—Br. Birds, vii. p. 253.

T. merula. Set with pinkish-white ground and reddish markings (Warwickshire).

Tringa totanus. Set with red-brown ground (Spain).

Vanellus vanellus. Set of 2 erythristic eggs (British).

Sterna hirundo. Set of 2 red eggs (British).

Lieut. D. H. MEARES showed two sets of 3 eggs of *Sterna hirundo*, both highly erythristic, taken on June 6 and 24 in East Anglia from the same bird.—Br. Birds, x. p. 292.

He also exhibited a clutch of 3 eggs of Redshank (*Totanus totanus*) with light green ground, and one of Common Snipe (*Gallinago gallinago*), in which all four eggs

were pale uniform green, unspotted. Before blowing, these eggs were blotched with darker green, but these markings have faded.

Mr. H. MASSEY exhibited a splendid series of no fewer than 33 erythristic eggs of the Herring-Gull (*Larus argentatus*) from the Norwegian coast, including seven sets of 3.

9 erythristic eggs of *L. marinus*, including two sets of 3, all from Norway.

One erythristic egg of *L. fuscus* (Norway) and one of *L. glaucus* (Labrador).

15 eggs of Blackcap (*Sylvia atricapilla*), all erythristic type.

9 eggs of Rock-Pipit (*Anthus s. obscurus*), all erythristic type.

Also a greyish-pink set of Meadow-Pipit (*A. pratensis*) from Sweden, and erythristic eggs of Skylark (*Alauda arvensis*), Tawny Pipit (*Anthus campestris*), Yellow Bunting (*Emberiza citrinella*), Little Bunting (*E. pusilla*), and Wood-Warbler (*Phylloscopus sibilatrix*). Also 36 more or less rufous eggs of *Cuculus canorus* with fosterers, 15 decidedly erythristic.

Mr. C. E. PEARSON exhibited a series of clutches of *Larus argentatus* ranging from pale blue, unmarked, and grey with brown blotches, to the normal type and the erythristic form, of which three eggs were shown.

Mr. R. H. READ showed sets of various species, some strongly erythristic and others showing a tendency towards it. Among them were fine red sets of Common Whitethroat, Sedge-Warbler, Blackcap, Meadow-Pipit, Tree-Pipit, Chaffinch, and Red-backed Shrike; also a set of Bullfinch, with pure white ground and red spots, all taken by himself. Other interesting eggs were two purplish-red eggs of Cuckoo with the set of Tree-Pipit in which they were found; set of 3 Herring-Gulls (Norway), two with white ground, the third cream-coloured, and all marked with red; fine red eggs of Sooty Tern from Ascension, Red Guillemot, Razorbill, Red-shank, etc. Others with more or less erythristic tendency were sets of Mistle-Thrush, Blackbird, Greenfinch, Yellow Bunting, Lesser Whitethroat, Tree- and House-Sparrow,

Snow Bunting, etc. With each set of erythristic eggs were shown sets of normal type, or tending to vary in the opposite direction. Eggs of Lapwing and Carrion Crow were also shown, so heavily marked that they might almost be classed as melanistic varieties.

Dr. P. RENDALL showed clutches of 9, 11, and 9 eggs of Pied Wagtail (*Motacilla alba lugubris*), all taken within thirty-seven days and within half a mile, in the same season. The first and second nests were only a foot apart. The last set contained a Cuckoo's egg. A Cuckoo's egg with dull red splashes was also shown with 3 Hedge-Sparrow's eggs (Surrey, 1909), also one of a dark sienna-red, and 3 Meadow-Pipit's eggs (Staffs., 1916).

Mr. S. BOORMAN exhibited three sets of Blackcap (*Sylvia atricapilla*) of pink type, of which four sets were found within a radius of half a mile in a fortnight, but none since. Also set of 4 Tree-Pipit (*Anthus trivialis*), bright terra-cotta ground with black hair-lines (Suffolk), and set of 6 very bright red-brown eggs taken in Surrey. A set of 4 Robin's and one erythristic Cuckoo's egg, taken in Surrey, were also shown.

Mr. F. R. RATCLIFF exhibited a very fine rufous set of Purple Gallinule (*Porphyrio porphyrio*) taken at Lac Fezzara in North Algeria.

Major C. SMEED showed a set of Ringed Plover (Gullane Links), with unusual light slaty-blue ground, finely marked.

Also an abnormally small Cuckoo's egg with 3 White-throat (Dorset).

Set of 4 Meadow-Pipit (Hants), closely resembling Reed-Warbler's eggs.

Set of 5 Meadow-Pipit taken in an oat-field near Ypres, and closely resembling an erythristic type of Tree-Pipit's egg, both in size and colour. Major Smeed spent much time and trouble in watching and identifying the birds.

Mr. G. TOMKINSON exhibited a series of five sets of Tree-Pipit's eggs, ranging in colour from plain blue (unmarked) to blue with brick-red spots and blue with reddish blotches; also a set of 6 Blackcap with pink ground. One of the clutches of blue Tree-Pipit's eggs contained a Cuckoo's egg.

Mr. ABEL CHAPMAN also forwarded for exhibition the eggs described in 'Wild Norway,' p. 107.

Mr. PERCY F. BUNYARD exhibited the following erythristic eggs from his collection :—

British Jay (*Garrulus glandarius rufitergum*). A clutch of 6 from Northants, with minute reddish-brown markings on a white ground ; a similar clutch of 4 from the New Forest.

—British Birds, vii. p. 247 ; Bull. B. O. C. xxxiii. p. 70.

Greenfinch (*Chloris chloris*). A clutch of 5 from Gloucestershire, with rose-pink markings on a pure white ground.

—British Birds, vii. p. 247.

Hawfinch (*Coccothraustes coccothraustes*). A clutch of 5 from Kent, creamy-white ground, richly blotched and vein-marked reddish brown ; underlying markings lead-grey.—

British Birds, vii. p. 247 ; one egg is figured in Dresser's 'Eggs of the Birds of Europe' ; Bull. B. O. C. xxiii. p. 24.

British Bullfinch (*Pyrrhula p. pileata*). A clutch of 5 from Northants, and a clutch of 4 from Surrey, pure white ground, faintly marked with pale red ; a clutch of 6 from Surrey, and a clutch of 6 from Kent, apparently in the transition stage, being only very faintly tinged greenish-blue.—British Birds, vii. p. 248 ; Bull. B. O. C. xxiii. p. 24, xxvii. p. 49.

Crossbill (*Loxia curvirostra*). A clutch of 5 from Suffolk, with pure white ground, faintly marked pale red.—British Birds, vii. p. 248 ; Bull. B. O. C. xxxi. p. 20.

Corn Bunting (*Emberiza calandra*). A clutch of 4 pure white eggs, without markings, Suffolk ; also a clutch of 5 from Suffolk, with greyish-white ground, with conspicuous underlying grey markings.—Bull. B. O. C. xxv. p. 14.

Yellow Hammer (*Emberiza citrinella*). A clutch of 5 from the Continent, exceptionally reddish in appearance, with a total absence of any greenish tinge usually found in the eggs of the species.—Bull. B. O. C. xxix. p. 87.

Skylark (*Alauda arvensis*). A clutch of 4 from Orkney, only three of which show true erythrism ; the fourth is almost normal in appearance, but is tinged with red, suggesting that erythrism with some species is a transition

stage.—British Birds, vii. p. 249, wrongly described as a clutch of 3 ; Bull. B. O. C. xxiii. p. 24.

Grey-headed Wagtail (*Motacilla flava thunbergi*). A clutch of 6 from the Continent, showing true erythrism.

Rock-Pipit (*Anthus petrosus*). Two clutches of 5 from Kincardine, both of which are exceptionally fine examples of true erythrism.—Ibis, 1916, p. 187.

Whitethroat (*Sylvia communis*). A clutch of 6 exceptionally handsome eggs from Northants ; also a clutch of 5 from Surrey, and two clutches from the Continent.—British Birds, vii. p. 252, wrongly described as *all* Continental.

Lesser Whitethroat (*Sylvia curruca*). A clutch of 4 from Banham, Suffolk, taken June 25, 1909, by L. W. Leader, who flushed the bird from the nest. This is believed to be the first authenticated record of erythrism occurring in the eggs of this species ; the eggs resemble in some respects the erythristic egg of the Common Whitethroat, but they possess characteristics of the Lesser Whitethroat ; they also agree in size. Weight : average 4 eggs, 0.095 m.g. ; average weight of 4 erythristic eggs of Common Whitethroat, 0.113 m.g.—Bull. B. O. C. xxxvii. p. 22.

Blackcap (*Sylvia atricapilla*). A particularly beautiful and well represented series, to show that an erythristic form shows as much variation as the type.—Bull. B. O. C. xxvii. p. 49.

British Song-Thrush (*Turdus musicus clarkei*). Clutches of 5 and 4 from Surrey ; also a clutch of 4 from Sussex, all with pure white ground. The two Surrey clutches are only faintly marked with pale red ; the Sussex clutch has rich reddish-brown spots. One from the first clutch is figured in Dresser's 'Eggs of the Birds of Europe.' An exactly similar egg is figured in the Cat. Birds Eggs B. M. iv. pl. viii. fig. 12.—Bull. B. O. C. xxv. p. 14 ; xxvii. p. 17 ; xxix. p. 87 ; British Birds, vii. p. 254.

Common Nightingale (*Luscinia megarhyncha*). A clutch of 3 from Northants, with a rose-pink ground, heavily marked at large ends with black-brown.—British Birds, vii. p. 254.

Spotted Flycatcher (*Muscicapa grisola*). A clutch of 5 from Kent, entirely without the greenish tinge, a comparatively rare occurrence with this species.—Ibis, Jan. 1916, p. 187; British Birds, vii. p. 251.

Cuckoo (*Cuculus canorus*). Four eggs from Kent, and one from Northants, all with Hedge-Sparrow's; all distinctly erythristic.

Nightjar (*Caprimulgus europæus*). Four clutches from various localities, showing pinkish ground.—British Birds, vii. p. 254; Bull. B. O. C. xxiii. p. 24.

Green Sandpiper (*Totanus ochropus*). A very reddish clutch. At least one form of the eggs of this species has a distinctly erythristic tendency.

Wood-Sandpiper (*Totanus glareola*). A clutch of 4 from Lulea.

Kentish Plover (*Ægialitis alexandrina*). A clutch of 4 from Holstein, with erythristic tendency; the green pigment is, however, present in the innermost lime-layer, though very slight.

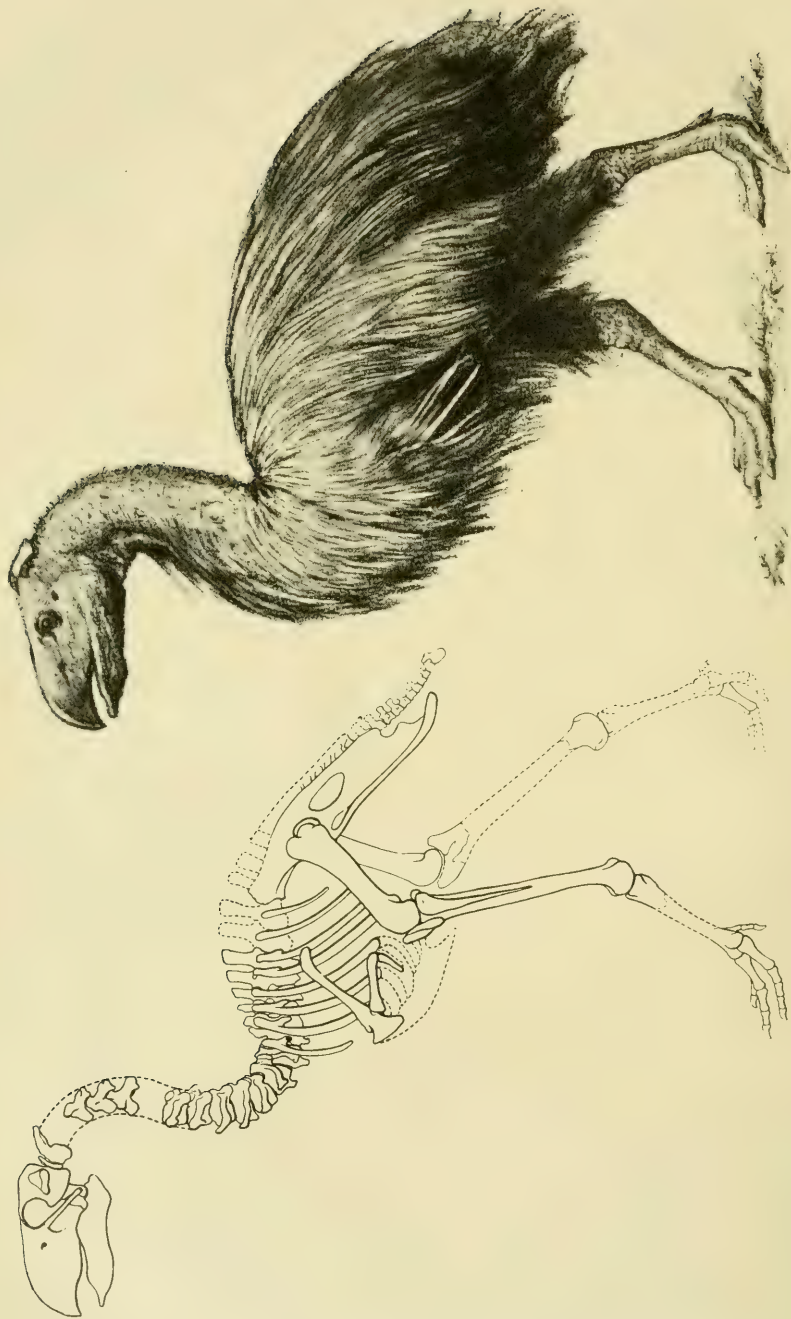
Lapwing (*Vanellus vanellus*). A clutch of 3 from Forfar, showing true erythrism; the green pigment usually present in the innermost lime-layer is wholly absent.—Ibis, 1917, p. 127.

Herring-Gull (*Larus argentatus*). A clutch of 3 very beautiful eggs from Norway. This clutch differs from the type eggs in the arrangement of the markings; this apparently often occurs with erythristic eggs.

Common Tern (*Sterna hirundo*). Three clutches of 3, and two of 2, each British; all from same locality. These are remarkably beautiful eggs, and vary in ground-colour from salmon-pink to reddish-brown. These eggs were first described by me in Bull. B. O. C. xxix. p. 45; British Birds, vii. p. 256.

Razorbill (*Alca torda*). Five eggs from various localities, showing true erythrism. The greenish tinge usually present in the innermost lime-layer in the eggs of this species is quite absent, which is apparently of rare occurrence.

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Common Guillemot (*Uria troille*). A well represented and beautiful series of erythristic eggs; one form at least is normally so.

Diatryma.

In the last number of 'The Ibis' (1917, p. 627) we gave some account of a paper by Messrs. Mathew and Granger on the extinct bird *Diatryma*. Through the courtesy of the Trustees of the American Museum of Natural History in Central Park, New York City, we are able to reproduce (Plate IV.) photographs of the reconstructed skeleton and also of a restoration of the bird itself, which has been prepared for exhibition in the Galleries of the American Museum.

Russian Ornithological Review.

We regret to hear that M. G. F. Poliakov, the founder and for eight and a half years the editor of the 'Messenger Ornithologique,' has been obliged, owing to ill-health, to resign his functions. He is succeeded by Prof. M. A. Menzbier, F.M.B.O.U., under whose able editorship the journal should have a continued prosperous life.

A new book by Mr. Beebe.

The New York Zoological Society have recently established a Tropical Research Station at Kalacoon in British Guiana, of which Mr. William Beebe, M.B.O.U., of the New York Zoological Park, is the chief. Together with his colleagues Messrs. G. Inness Hartley and Paul G. Howes he has recently prepared an account of the Station, its work and surroundings. The volume is entitled "Tropical Wild Life in British Guiana," and may be obtained from the Chief Clerk of the New York Zoological Park, New York, N.Y., U.S.A., price \$3.

Errata in Major Meiklejohn's paper,
'Ibis,' 1917, pp. 196-197.

pp. 196-197, wherever "grammes" are quoted a decimal point should be placed in front of the figures given; thus 188 grammes should read ·188 grammes (or 188 milligrammes).

p. 197, for $\cdot 84'' \times \cdot 63''$ read $\cdot 83'' \times \cdot 63''$ (line 3 from top)
and for $\cdot 82'' \times \cdot 65''$ read $\cdot 82'' \times \cdot 64''$ (line 4 from top).

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THE IBIS.

TENTH SERIES.

VOL. VI. No. 2. APRIL 1918.

XI.—*On Birds recently collected in Siam.* Part II. Passeres.
By C. BODEN KLOSS, M.B.O.U.

[Concluded from p. 114.]

MUSCICAPIDÆ.

† 63. *Siphia albicilla* (Pall.).

2 ♂, 2 ♀. Lat Bua Kao.

Iris dark; bill brown or black; feet black.

T. L. 121, 130, 127, 128; W. 68, 69, 68, 68.

These examples have whitish throats, with the exception of one male in which the chin and throat are washed with fulvous.

† 64. *Alseonax latirostris* (Raffles).

1 ♀. Lat Bua Kao.

1 ♀. Koh Lan, Inner Gulf of Siam. Oct. 1916.

Iris dark; bill black, base of mandible yellow; feet black.

T. L. 125, 128; W. 66, 66.

† 65. *Cyornis sumatrensis* Sharpe.

Hartert, Nov. Zool. ix. 1902, p. 549.

4 ♂ ad., 1 ♀ ad., 1 ♀ imm. Lat Bua Kao.

Iris dark ; bill black ; feet (males) pale pinkish-plumbeous or dark lilac, (females) pinkish-plumbeous or bluish-fleshy.

Males : T. L. 137-153 ; W. 65-68.

Females : T. L. 150, 135 ; W. 68, 61.

The adult female is a bluish olive-brown above, bluest on the rump ; tail black on inner, blue on outer webs ; wings dusky edged with olive-brown ; point of forehead and a ring round the eye buffy ; sides of neck like the nape, ear-coverts rather paler : below like the males, but paler, the rufous of the fore-breast extending to the point of the chin.

† 66. *Cyornis pallidipes hainana* (Grant).

Siphia hainana O.-Grant, P. Z. S. 1900, p. 480.

Siphia pallidipes hainana Hartert, Nov. Zool. xvii. 1910, p. 225.

2 ♂ ad. Lat Bua Kao.

Iris black ; bill brown ; feet dark pinkish-plumbeous.

T. L. 145, 155 ; T. 54, 59 ; W. 70, 70 ; Ta. 16, 16 ; B. f. g. 16.4, 16.7.

The only examples of this species known from Siam, five in number, obtained by Gyldenstolpe and myself, are all males, while, unfortunately, females are necessary to settle the point as to which subspecies Siamese birds really belong ; for the difference in size between Hainan birds and the true *C. p. pallidipes* from southern India are, *fide* Hartert, less marked than was at first supposed. On geographical grounds I have placed these specimens under the name given to Hainan examples, believing that all Indo-Chinese birds will prove alike.

† 67. *Hypothymis azurea styani* (Hartl.).

Stresemann, Nov. Zool. xx. 1913, p. 295.

3 ♂ ad., 3 ♀ ad. Lat Bua Kao.

1 ♂ ad., 1 ♀ ad. Satahip, Cape Liant, S.E. Siam. Nov. 1916.

1 ♀ ad. Koh Mesan near Cape Liant, S.E. Siam. Nov. 1916.

Iris dark ; bill (males) cobalt, edges and tip black, (females) dull cobalt or dark brown or blackish with the

mandible horny; feet dull cobalt or plumbeous-blue or brownish-cobalt.

Males: T. L. 157-168; W. 69-71.

Females: T. L. 160-165; W. 67-71.

In 1910 Hartert (Nov. Zool. xvii. p. 225) recorded his opinion that *H. a. styani* was the same as *H. a. ceruleocephala* (Sykes) from the Dekkan, and a year later Oberholser in his "Monograph of the Flycatcher Genera *Hypothymis* and *Cyanonympa*" (Proc. U.S. Nat. Mus. xxxix. p. 596) with inadequate material in front of him was content to accept this pronouncement, and the range of *ceruleocephala* was thus defined as all Peninsular India and Indo-China—a very improbable distribution considering the subspecific differentiation that occurs elsewhere. In 1913, however, Stresemann, in his revision of the species, came to the conclusion that *H. a. ceruleocephala* was confined to Peninsular India (Dekkan and southwards), and that *H. a. styani* was a good subspecies which extended from Hainan through Indo-China to India north of the Dekkan. Stresemann had five series of specimens from these areas, and the recognition of two races—an Indian and an Indo-Chinese—was to be expected.

I have no hesitation in recording my white-bellied examples as *H. a. styani*; a comparison of them with Malayan birds shows that the change to *H. a. prophata* Oberholser takes place somewhere in Peninsular Siam.

+ 68. *Muscitrea grisola* (Blyth).

2 ♂ ad., 1 ♀ ad., 1 ♀ imm. Koh Lak.

Iris dark; bill black; feet dull plumbeous.

Males: T. L. 155, 162; W. 80, 83.

Female ad.: T. L. 162; W. 81.

The young female (wing 77 mm.) has the secondaries and wing-coverts broadly edged with ferruginous.

+ 69. *Xanthopygia narcissina xanthopygia* (Hay).

1 ♀ ad. Lat Bua Kao.

Iris dark; bill black, base of mandible blue-grey; feet pinkish-cobalt.

T. L. 138; W. 70.

† 70. *Rhipidura javanica* (Sparrm.).

1 ♂, 1 ♀. Tachin, Central Siam. Oct. 1916.

2 ♂, 2 ♀. Koh Lak.

Iris dark; bill and feet black.

Males: T. L. —, 183, 197; W. 78, 72, 78.

Females: T. L. 188, 185, 180; W. 76, 74, 77.

This Flycatcher was very common in the above localities, but does not seem to have been obtained in Siam north or east of Bangkok. It is stated by Oustalet to breed in Cochinchina. I have compared my birds with four topotypes from Java (wings 74–77 mm.) and can detect no differences.

CAMPEPHAGIDÆ.

† 71. *Graucalus macei macei* Lesson.

Graucalus macei Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. 1. No. 8, 1913, p. 34; id. *op. cit.* lvi. No. 2, 1916, p. 70.

1 ♂. Lat Bua Kao.

Iris brown; bill and feet black.

T. L. 303; T. 125; W. 170; Ta. 26; B. f. g. 35.

Lores and frontal plumes black; a dark ring round the eye; ear-coverts only slightly darker than the grey of the head; primaries and primary-coverts black, edged with grey. (Also obtained by me in south-eastern Siam, though omitted from the account of my previous collection: 'Ibis,' 1915, pp. 718–761.)

Graucalus macei has been divided into three races—the typical form which came from Bengal; *G. m. nipalensis* Hodgs. from Nepal (Ind. Rev. 1837, p. 227); and *G. m. layardi* Blyth, from Ceylon and southern India ('Ibis,' 1866, p. 368).

Hume went into the matter of these races at some length ('Stray Feathers,' ii. p. 204), and found that throughout the Himalayas*, at Dacca, and in Tipperah, occurred birds with wings of about 180 mm. and larger†; in Ceylon

* *Vide* also Scully, 'Stray Feathers,' viii. p. 244.† Also in Assam, *vide* Ball, 'Stray Feathers,' ii. p. 400.

and southern India the wing-length ranged from about 147–160 mm.; while the wings of Calcutta birds varied from 162–170 mm.: these last are the typical form which apparently extends through Burma to Siam.

I have examined specimens in the Indian Museum collection from south Sylhet and Tsagain, Burma, with wings of 172 mm. Tweeddale ('Ibis,' 1873, p. 311) records specimens from Tounghoo and Moulmein with wings of 173 and 165, and birds from Siam, mine being the most easterly on record, have the wings 161–170 mm. I have also examined younger birds with partly banded underparts from Manbhum and Orissa (practically topotypes) having wings of 163 mm., and, allowing for differences in age, the Indo-Chinese examples seem exactly similar.

† 72. *Volvocivora koratensis*, sp. nov.

1 ♀. Lat Bua Kao, East Siam. Nov. 1916. = Oct. 11.

Iris brown; bill black, lower mandible horny below at the base; feet black.

T. L. 247; T. 108; W. 120; Ta. 22; B. f. g. 24.5.

Head, neck, and upper breast grey, the lores rather dusky; the feathers of the occiput and throat with dark shaft-stripes and those below the eye with whitish spots. Back from scapulars to tail-coverts grey tinged with russet, upper tail-coverts palest. Lower breast, abdomen, and flanks grey tinged with russet and faintly banded with narrow dusky bars; under tail-coverts creamy-white, the shorter feathers obsoletely barred with dusky. Primaries black, 2nd, 3rd, and 4th very narrowly edged with white; secondaries black, slightly washed with grey on the outer webs and narrowly edged with pale grey; primary-coverts black, very narrowly edged with pale grey; greater and median coverts black, edged with grey like the secondaries; lesser coverts grey like the scapulars. Tail black, the median pair of feathers slightly tinged with grey proximally; the other feathers black tipped with white, the outermost pair having the white about 8 mm. in depth, but gradually decreasing in the others until it can only just be seen on the outer middle pair.

Wings and tail with a slight greenish sheen. Axillaries grey like the breast; the under wing-coverts mingled grey, dusky, and whitish. A patch of white on the inner webs of the 3rd, 4th, and 5th primaries. Wings and tail with a greenish gloss.

On account of its size and general coloration this bird only seems to need comparison with *V. lugubris* Sundev. (= *melaschistus* Hodgs.) and with *V. intermedia* Hume, which is probably the south-eastern representative of the other. (All that can be gathered from Hume's description of *intermedius* is that it is paler than *lugubris*, and that the difference in length between the inner and outer tail-feathers is greater, while the white tips are also larger; the size is about the same. It is therefore a bird with grey under tail-coverts. The types came from the hills of Tenasserim, and it extends northward to Pegu.)

V. koratensis is clearly distinguished from both by the possession of white, instead of grey, under tail-coverts. In *V. innominata* Oates the under tail-coverts are ashy. *V. saturata* from Hainan is rather smaller and has, at most, only the longest under tail-coverts tipped with white; *V. melanopectera* Rüpp. (= *avensis* Blyth?) and *V. neglecta* Hume have white under tail-coverts, but are smaller birds.

† 73. *Volvocivora polioptera* (Sharpe).

Campophaga polioptera Sharpe, Cat. Birds Brit. Mus. iv. 1879, p. 68, pl. ii.

Volvocivora avensis Tirant, Bull. du Comité agri. et indust. Cochinchine, 1879, (3) i. No. 1, p. 111, No. 128.

Volvocivora intermedia Tirant, loc. cit. supra, No. 129.

Campophaga neglecta Oustalet, Nouv. Archiv. du Mus. (4) v. 1903, p. 45.

2 ♂, 1 ♀. Koh Lak.

Iris crimson-brown (old male) or brown; bill and feet black.

T. L. 210, 212, 212; T. 95, 95, 95; W. 109, 109, 108; Ta. 20, 19.5, 20; B. f. g. 22.5, 21.5, 21.5.

This species was described by Sharpe from two unsexed

specimens, which he considered to be male and female from Lower Cochin-China*. The name has not come into use, perhaps because no further examples have attracted the notice of ornithologists, perhaps because Oates ('Birds of Burma,' i. 1883, p. 232) stated that Sharpe's types were both merely females of *V. neglecta* Hume. My three carefully sexed specimens show that Oates was quite wrong and Sharpe right, and that the species or race is a perfectly good one.

As the fourth volume of the 'Catalogue of Birds' is now very rare and frequently inaccessible, and no other account of *V. polioptera* exists, I shall describe my birds, which are apparently only non-typical in that they are somewhat larger than the original pair. Sharpe's figure is bad, it does not even agree with his description.

Male. General colour above grey, "slate-grey" on the head, "deep dull grey" on the rump and upper tail-coverts; the crown with faint traces of dark shaft-stripes. Least wing-coverts like the back, somewhat darker in part; median and greater coverts darker than the back, their edges rather paler, or, like the back, with paler edges; bastard wing- and primary-coverts black, margined with the grey of the back. Primaries black, except the first, variably margined with white or grey and tipped with whitish, most extensively on the inner feathers. Secondaries black, externally grey like the back, the edges and tips whitish.

Two central tail-feathers "dark dull grey" with sub-terminal oblong patches of black, the tips white, the quills black; remaining tail-feathers black, tipped with white, which increases in extent towards the outermost where the tip is about 18 mm. long: the pair next the innermost with grey bases and a grey or whitish edge to the outer web; the edges of all the inner webs whitish (and in one bird the outer webs edged with white also).

* Lower Cochin-China (Basse Cochin-Chine) is now known as Cochin-China; the greater portion of it lies south of the eleventh parallel of latitude, but near Saigon it extends nearly to Lat. 12° N.

Sides of face like the crown, a little dusky in front of the eye and on the ear-coverts (in one specimen only). Under surface of the body gradually paling from the slate-grey throat to white under tail-coverts. Under wing-coverts and axillaries grey and whitish; wing greyish-black below, the inner webs of all except the first primary and some of the secondaries variably white.

Female. Differs from the male in being a trifle less of a blue-grey above and in having the rump and upper tail-coverts indistinctly tipped with whitish. The two tail-feathers on each side of the middle pair have the outer webs largely grey, and there are numerous obsolete bars below on the inner webs (these are present in the males, but barely perceptible). The secondaries and the primaries, except the first three, are broadly edged with whitish, as are the greater coverts. A whitish eyebrow is present, the feathers below the eye are spotted and the ear-coverts striped with whitish. The lores are dusky.

The under surface is white, washed with greyish on the breast and barred with dusky cross-lines which become wider apart posteriorly; they are absent on the terminal half of the white under tail-coverts.

A female from northern Siam obtained by Mr. K. G. Gairdner differs in having the bill and feet brown, not black; there are marked black shaft-stripes on the crown, the rump is faintly tinged with russet, and the lower breast, abdomen, and tail-coverts are tinged with buff. It is slightly larger (W. 111; Ta. 21), and perhaps, like so many birds of this region, *V. polioptera* increases in size towards the north; my birds are intermediate between Mr. Gairdner's specimen and the types (wings 106 and 104 mm.).

Gyldenstolpe has recorded as *V. m. avensis* a pair of Cuckoo-Shrikes from Koh Lak and a male from northern Siam (Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, p. 71); from their dimensions (wings 109, 111, 109 mm.) they might be examples of *V. polioptera*, and they have the large white patches on the under side of the wing; no other details are

given, save that the northern specimen is rather darker than the others.

† 74. *Pericrocotus cinereus* Lafr.

1 ♂. Koh Lak.

Iris dark: bill and feet black.

T. L. 205; W. 96.

PYCNONOTIDÆ.

† 75. *Ægithina viridissima* (Bp.).

3 ♂. Koh Lak.

Iris greyish-white, pale grey, or dark; bill blue-grey, culmen blue; feet dull cobalt or greyish-plumbeous.

T. L. 135, 138, 140; W. 58, 60, 59; B. f. g. 17.5, —, 16.

† 76. *Æthorhynchus lafresnayeri* (Hartl.).

Æthorhynchus xanthotis Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. 1. No. 8, 1913, p. 22, pl. i. fig. 1.

1 ♂, 1 ♀. Lat Bua Kao.

1 ♂, 1 ♀. Satahip near Liant, S.E. Siam, Nov. 1916.

Iris brown or dark; bill blue-grey, culmen black; feet blue-grey or dull cobalt.

Males: T. L. 166, 162; W. 70, 71; B. f. g. 20.3, 23.2.

Females: T. L. 165, 162; W. 68, 67; B. f. g. 22, 24.

I have compared these birds, the males of which are in green plumage, with a large series of topotypes from the Malay Peninsula, and they are quite identical with examples in the same stage, except that, on the whole, they have yellower ear-coverts; but as these darken with age (becoming black in old males) this is a negligible difference. The wings of Malayan birds range between 68 and 72 mm., and the bills vary considerably. Gyldenstolpe's two males from eastern Siam, recorded by him as *Æ. xanthotis*, agree in description and size with mine, so that, even if it is a good form, I do not think *Æ. xanthotis* Sharpe (Cat. Birds, vi. p. 15), based on a single female from Cambodia, can yet be claimed to occur in Siam. A pair from Burma (Tenasserim and Minthan-toung) do not differ from Malayan birds either.

+ 77. *Chloropsis chlorocephala* (Wald.).

1 ♂. Lat Bua Kao.

Iris dark ; bill black ; feet plumbeous-blue.

T. L. 182 ; W. 86.

+ 78. *Chloropsis aurifrons inornatus*, subsp. nov.

1 ♂ ad., 2 ♀ subad., 1 ♀ imm. Lat Bua Kao.

1 ♀ ad., 1 ♀ imm. Koh Lak.

Iris dark ; bill black ; feet plumbeous.

Adult males : T. L. 183 ; T. 65 ; W. 88 ; Ta. 18 ; B. f. g. 22.5.

Adult females : T. L. 183, 189, 172 ; T. 63, 63, 60 ; W. 87, 86, 85 ; Ta. 18, 18, 18 ; B. f. g. 22.5, 22.5, 21.5.

Like *C. aurifrons aurifrons*, but with the orange forehead of smaller extent, scarcely reaching beyond the posterior limit of the eyes and without any trace of a golden collar bordering the black throat ; also without any yellow on the occiput and sides of the head.

C. a. aurifrons was supposed by Temminck to have come from Sumatra, but Sharpe, who examined the types in the Leyden Museum, found that this obvious error had been amended and "India" substituted, so that region may be taken as the typical locality (Cat. Birds, vi. p. 21). Himalayan birds which have been named *hodysoni* by Gould are the largest and brightest of all (*vide* Hume & Davison, 'Stray Feathers,' vi. p. 326) ; therefore it would seem that the species gets smaller and duller in colour as it goes south-eastward. My series shows no difference in the colour of the two adult birds, which alone have the forehead clear bright orange ; the frontal region of the subadult birds is duller and tinged with green, of the immature examples almost entirely green : all except the latter have the chin and throat, as well as the moustachial streak, clear blue ; in the two young birds this colour is replaced by green on the chin and throat.

I have examined five specimens of *C. aurifrons* from northern Assam : four skins (unsexed) have a large orange

frontal patch, the occiput tinged with yellow and a yellow border all round the black area of the throat; an immature female with a green chin and black throat has the frontal region deep yellow, but shows distinct promise of a yellow collar (wings 84-90 mm.).

+79. *Microtarsus melanocephalus* (Gm.).

2 ♂. Koh Lak.

Iris pale blue; bill and feet black.

T. L. 180, 182; W. 79, 79.

Erroneously supposed in the first instance to have come from the Sandwich Islands, Sumatra has recently been designated as the type-locality (Oberholser, Smithsonian Misc. Collections, lx. No. 7, p. 10, footnote). I cannot find any differences between Sumatran, Malayan, and Siamese birds.

+80. *Pycnonotus analis* (Horsf.).

1 ♂. Tachin, Central Siam. Oct. 1916.

Iris brown; bill and feet black.

Tail 84; W. 90; Ta. 21; B. f. g. 21.

The wings of a pair of topotypes from Buitenzorg are 85 mm. long, whereas those of Sumatran and continental birds are often over 90 mm. A larger series from Java would probably show that no difference in size exists; the colour of all is alike. Freshly moulted birds are sometimes very dark, especially on the breast.

+81. *Pycnonotus finlaysoni* (Strickl.).

3 ♂, 3 ♀. Lat Bua Kao.

1 ♂. Satahip near Cape Liant, S.E. Siam. Nov. 1916.

1 ♂. Koh Mesan off Cape Liant, S.E. Siam. Nov. 1916.

Iris brown or grey; bill black or with mandible plumbeous; feet plumbeous or black.

Males: T. L. 200, 190, 190, 200, 197; W. 85, 79, 79, 78, 82.

Females: T. L. 192, 188, 178; W. 75, 75, 74.

+ 82. *Pycnonotus blanfordi robinsoni* Grant.

Pycnonotus robinsoni Grant, Fasciculi Malayenses, Zool. Pt. iii. 1905, p. 85; Kloss, Journ. Fed. Malay States Mus. iv. 1911, p. 231.

1 ♀. Koh Mesan off Cape Liant, S.E. Siam. Nov. 1916.

1 ♂, 2 ♀. Koh Lak

Iris dull blue or grey; bill black, base of mandible fleshy; feet plumbeous-brown or blackish-brown.

Male: T. L. 200; W. 84.

Females: T. L. 212, 202, 202; W. 85, 84, 80.

A comparison of these birds and others from Bangkok and peninsular Siam (typical locality) with examples of *P. b. blanfordi* from Upper Burma (typical locality) and Chiangmai, northern Siam (coll. K. G. Gairdner), shows that they differ in having the breast rather paler, the abdomen considerably washed with yellow ("baryta yellow") and the under tail-coverts brighter; also there is perhaps a rather stronger tinge of olive in the upper-parts.

83. *Otocompsa flaviventris minor*, subsp. nov.

Otocompsa flaviventris Robinson, Ibis, 1916, p. 747.

1 ♀ ad. Koh Lak, S.W. Siam. 16 November, 1916.

Iris yellow; bill and feet black.

Smaller than *O. f. flaviventris* (Tickell) of Chota Nagpur; wing 83 mm. or less.

This form occurs throughout the Malay Peninsula, where the examination of a large series shows that the wing-length ranges between 77 and 82 mm.; and it probably extends through south-eastern Siam (where I obtained a large series in 1914-15, of which no measurements have been recorded) to Cambodia and Cochin-China.

84. *Otocompsa flaviventris johnsoni* (Gyldenstolpe).

Rubigula johnsoni Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. l. No. 8, 1913, p. 25, pl. i. fig. 3.

Rubigula johnstoni Grant, Bull. B. O. C. ^{xi} p. 11 (1915).

4 ♂, 4 ♀, 2 ♀ juv. Lat Bua Kao.

Iris pale yellow (in juv. yellowish-white); bill and feet black.

Males: T. L. 195, 190, 186, 183; W. 85, 84, 83, 81.

Females: T. L. 200, 190, 181, 177 (juv. 190, 185); W. 84, 81, 80, 80 (juv. 75, 80).

This handsome Bulbul, first obtained and described by Count Nils Gyldenstolpe, appears to be peculiar to eastern Siam, as black-throated birds neighbour it on the west and in the north extend (*fide* Oustalet, *Nouv. Archiv. du Mus.* (4) p. 81) through Yunnan to Tonkin, while they also occur in south-eastern Siam and Cambodia. Thus its distribution is confined to eastern Siam with a possible extension to central Laos and Annam, concerning which areas I can find no records.

It does not, as supposed, belong to the genus *Rubigula*—for it has a well-developed crest,—but to *Otocompsa**, though the red throat-patch and general coloration give it a superficial resemblance to *Rubigula dispar* of Java and Sumatra with which it was originally compared, and to *R. gularis* of southern India; the gular patch has the same shining appearance as in those birds, but in a very modified degree.

Except for the red throat, the colour of *O. f. johnsoni* is exactly that of *O. f. flaviventris*, of which it is a local development, and it is therefore a much duller bird than *R. dispar*.

The individuals of my series vary considerably in the size and colour of the red area—perhaps because they were collected in the moulting season,—and it is only by a careful examination of one male in moult that any indication of the red colour can be found, for, save for a minute spot of red on two or three of the feathers, the throat is black, though the feathers there are still rather glistening. In other specimens in moult the throat-patch is small and the feathers are parti-coloured black and red, and it is probably only after several moults that the pure glistening red throat

* *Mesolophus* Büttikofer, *Notes Leyden Museum*, xvii. p. 247, 1895-6.

is attained; otherwise we must assume that the feathers change colour during their growth.

In the two young birds the throat is clad with soft, dull, yellow feathers beset with three or four of glistening orange-red; the heads of these birds are brown, sprinkled with the black feathers of the mature plumage.

The assumption of the throat-colours in the three birds—*montis* of Borneo, *flaviventris*, and *johnsoni*—is interesting. In *montis* the throat remains yellow; in *flaviventris* it is first yellow and then becomes black; while in *johnsoni* it is first yellow, next black, and, finally, red.

TIMELIIDÆ.

† 85. *Pellorneum subochraceum* Swinh.

2 ♂. Lat Bua Kao.

2 ♂, 1 ♀. Koh Lak.

Iris hazel or crimson; maxilla brown; mandible—proximal half yellow, distal portion fleshy, pale grey, or brown; feet fleshy or yellowish-fleshy.

Males: T. L. 162, 170, 166; W. 65, 67, 68, 67.

Female: T. L. 155; W. 63.

This bird is subject to a good deal of individual variation, and the specimens in the present small series differ considerably in the amount of the sandy suffusion on the under-parts and size of the dark breast-stripes.

† 86. *Malacocincla abbotti abbotti* Blyth.

Turdinus abbotti Robinson, Ibis, 1915, p. 749.

2 ♂, 2 ♀. Lat Bua Kao.

Iris hazel or brown; maxilla blackish; mandible pale blue-grey; feet fleshy or brownish-fleshy.

Males: T. L. 165, 151; W. 73, 70.

Females: T. L. 152, 148; W. 66, 66.

This race (typical locality Arakan) extends down the Malay Peninsula about as far as Penang; south of that it is replaced by a very slightly differentiated form, *M. a. olivacea* (Strickl., typical locality "Malacca").

I found it very common in 1914–15 in the extreme

south-east of Siam, and on the neighbouring island Koh Kut, where I preserved many specimens of it (not of *M. a. olivacea*, as stated by Gyldenstolpe).

487. *Setaria lepidoccephala* (Gray).

Setaria rufifrons (Cab.) ; Robinson, Ibis, 1915, p. 748.

5 ♂, 4 ♀. Lat Bua Kao.

1 ♂, 1 ♀. Satalip near Cape Liant, S.E. Siam. Nov. 1916.

Iris (males) hazel, brown, or crimson, (females) hazel; maxilla black; mandible blue-grey or pale grey; feet pinkish-plumbeous, bluish-brown, or dull pinkish-blue.

Males: T. L. 158, 155, 155, 154, 153, 155.

Females: T. L. 150, 150, 146, —, 147.

Males: T. 61, 62, 64, 61, 60, 60.

Females: T. 57, 58, 54, 56, 57.

Males: W. 74, 72, 72, 69.5, 71, 72.

Females: W. 68, 67.5, 69, 67, 67.

Males: Ta. 19, 20, 20, 20, 20, 19.5.

Females: Ta. 19, 19.3, 20, 19.7, 20.

Males: B. f. g. 17, 18, 18.4, 18, 17.5, 17.3.

Females: B. f. g. 17, 16, 16.5, 16.5, 17.2.

I have not seen the original description of *S. rufifrons*, but (*vide* Finsch, Notes Leyden Museum, xxii. p. 220) Cabanis's measurements (W. 80, T. 67, Ta. 22) are so much larger than any known to me of Sumatran, Japanese, and Siamese birds which have been recorded by that name, that one is made to wonder whether what has been regarded as *S. rufifrons* is really the bird of Cabanis.

Setaria cinerea (Eyton) is as small a bird as the present, but I have examined a series of *Setaria magnum* (Eyton) from the Malay Peninsula and find, though the majority are considerably larger, that four males out of fourteen examples agree very closely in dimensions (W. 79-80, T. 64-70, Ta. 21-22) with those given by Cabanis, and, unless his description, or his material, if in existence, clearly shows that the throat is immaculate and the nape not black, I should feel much inclined to question whether subsequent

authors have assigned his name correctly ; therefore I have not used it here. The next name available is *lepidocephala*, fixed by Büttikofer on Javan birds about which no doubt exists. I have not been able to obtain topotypes, but the appearance of the Siamese birds is as follows :—

General colour above brownish-olive (between “brownish olive” and “medal bronze,” *Ridgway*), the rump brightest ; wing-coverts like the back, the bastard wing- and primary-coverts a little duller ; visible portion of primaries like their coverts, of secondaries like the back ; upper tail-coverts tawny-rufous throughout ; tail-feathers above rather darker, becoming dusky-rufous towards the end, but with tawny-rufous edges for the greater part of their length ; crown of head tawny-rufous, the feathers with pale shafts and black tips ; the nape like the back, with obsolete dusky fringes to the feathers ; frontal plumes, lores, and feathers round the eye ashy-white, above the eye some small scaly feathers of fulvous tipped with black ; ear-coverts pale fulvous-brown with buffy shaft-lines ; cheeks fulvous-white with dusky edges to the feathers ; throat white ; rest of under-surface white, completely suffused with buffy ; sides of breast and flanks slightly tinged with brownish-olive and sometimes very vague stripes of the same on the breast ; thighs pale brownish-olive, sometimes tinged with fulvous. Under tail-coverts like the belly ; axillaries and under wing-coverts dull buffy with dark bases. Quills dusky below, all except the first and upper tertiaries with albescent edges to their inner webs.

Sharpe’s description of a Sumatran female (*Cat. Birds*, vii. p. 567) seems to show considerable differences in the tones of the colours : it may be that it was based on an old and faded skin. A Javan female mentioned by him seems to agree more closely.

† 88. *Mixornis rubricapilla* * *sulphurea* (Tickell).

Stachyridopsis sulphurea Rippon, *Bull. B. O. C.* xi. 1890, p. 11.

* With regard to the specific name of this bird, Mr. Oberholser has pointed out (*Smithsonian Misc. Collections*, lx. No. 7, p. 9) that *Motacilla gularis* Raffles (*Trans. Linn. Soc.* xiii. p. 312, 1820) is

Mixornis gularis rubricapilla Harington, Bull. B. O. C. xxxiii. 1913, p. 63; id. Journ. Bombay Nat. Hist. Soc. xliii. 1915, pp. 632-633.

Mixornis gularis minor Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 60.

7 ♂, 2 ♀. Lat Bua Kao.

Iris pale yellow to ochreous; bill dark plumbeous or pale plumbeous, with culmen blackish; or maxilla blackish, mandible plumbeous; feet olive-yellow or brown or greenish-brown.

Males: T. L. 132, 130, 130, 130, 130, 130, 130.

Females: T. L. 127, 122.

Males: W. 54, 57, 54, 55, 54.5, 54.5, 56.

Females: W. 52.5, 53.

Males: Ta. 16, 16, 16.5, 17, 16.5, 16.5, 16.5.

Females: Ta. 16.5, 16.

Males: B. f. g. 15.6, 15.2, 15, 15.7, —, 15.2, 15.

Females: B. f. g. 15.3, 15.

The loan by Mr. W. J. F. Williamson of eighteen specimens of *Mixornis* from various parts of Siam enables me to state that birds from eastern Siam (fifteen examples from Lat Bua Kao and two from Muak Lak) are indistinguishable from topotypes of *M. g. minor* Gyldenstolpe, from northern Siam (five specimens examined, wings 50-55 mm.), which are stated to be the same as specimens from Ahsohn (Aswon) east of Moulmein, Tenasserim. The only difference between the birds from the two areas

preoccupied by *Motacilla gularis* Gm. He suggests that *Prinia pileata*, applied by Blyth (Journ. Asiat. Soc. Bengal, xi. 1842, p. 204) to birds from Malacca, should be used, but he has not realised that *Motacilla rubricapilla* Tickell, is only subspecifically distinct and is thus next in priority. If the first race known had to remain the type of the species whatever name it eventually bore, we should have to call this bird *Mixornis sumatranus* (Bp. Consp. Av. i. 1850, p. 217). Such a practice would seem to me logical, as the first race described ought to be always the type of the species irrespective of its title. Horsfield in 1824 (Zool. Res. in Java) gave an excellent description of Raffles's bird under the name *Timalia gularis*, but by the rules governing zoological synonymy this name is unfortunately unavailable.

is that the northern wing-series is 50-55, that of the eastern 52·5-57.

In describing *M. g. minor*, Gyldenstolpe either ignored or was unaware of the fact that the *Mixornis* of the South Shan States had already been described by Rippon as *Stachyridopsis sulphurea*. Gyldenstolpe's name is thus almost a pure synonym for this, since it is practically impossible that birds of such small adjacent areas as northern Siam and the South Shan States can be distinct.

M. r. sulphurea differs principally from *M. r. rubricapilla* (topotype from Manbhum, west of Calcutta, examined) in having the black stripes of the fore-neck and breast much finer—reduced to mere shaft-lines. This form, or one closely allied to it, seems to occupy an eastern area extending through Yunnan to Tonkin (*vide* Oustalet, Bull. Mus. Paris, 1896, p. 184; *id.* Nouv. Arch. du Mus. (4) v. p. 92).

M. r. rubricapilla extends from Bengal through Burma and down the coast of Tenasserim to a few miles south of Tavoy, but at Mergui another race commences (*vide* Hume & Davison, 'Stray Feathers,' vi. pp. 266-267).

In going into the question of *Mixornis* I have examined about a hundred examples ranging from northern Siam to western Sumatra, and I find that the birds occurring at Mergui, Bangkok, Cape Liant, and down the Malay Peninsula differ from *M. r. rubricapilla*, as noted in 'Stray Feathers,' in having the black stripes heavier and produced further down the breast, a longer more robust bill, a deeper rufous crown, a rather narrower yellow supercilium, and rather darker back; they are separable at a glance from *M. r. sulphurea* with its pale "Sudan brown" crown, olivaceous upper-parts, and bright yellow under-parts where the mere shaft-stripes are confined to throat and fore-breast. They extend about as far south as Penang and Singgora, and to the islands adjacent, chief of which are the Bandon Group, Terutau, and the Lang Kawis—as with several mammals and other birds, northern forms range further down the west coast of the Malay Peninsula than down the east, and southern forms further up the east than the west

coast. Typical birds come from about Lat. 10° N., and for them I propose the name

+ *Mixornis rubricapilla connecteus*, subsp. nov.

They differ from *M. r. pileata* of the Malay States and Patani in being a little less rufescent, more olive, above, the yellow eyebrow more marked, and the black stripes less heavy.

The race first known, that of Sumatra now to be called *M. r. sumatrana*, differs from *pileata* in having the yellow eyebrow only just traceable, the black stripes very broad and continued over the lower breast as shaft-lines, and the upper-parts very rufous and not strikingly different from the chestnut dark-shafted crown. This form also has a very heavy bill.

Excluding the Shan-Siamese race, which is a departure on different lines, *Mixornis rubricapilla* increases from north to south in size of bill, heaviness of breast-striping, and greater depth of rufescence on head and back; but it decreases as regards the extent and clearness of the yellow eyebrow.

The following are a few measurements of some of the southern races:—

M. r. connectens.

Males: W. 59, 57, 55; B. f. g. 16.2, 17, 16.5.

Females: W. 58, 56, 54; B. f. g. 16, 17, 16.

M. r. pileata.

Males: W. 58, 57, 57; B. f. g. 17, 17, 17.

Females: W. 58, 56, 54; B. f. g. 17, 17, 17.

A female of *M. r. sumatrana*.

W. 57; B. f. g. 17.

+ 89. *Myiophoneus eugenii* Hume.

Myiophoneus eugenii Hume, Stray Feathers, i. p. 475 (1873); Robinson, Ibis, 1915, p. 750; Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 62.

1 ♀ ad. (?), 1 ♀ imm. Koh Lak.

Iris dark; bill deep yellow, culmen and nasal region blackish; feet black.

T. L. 310, 303; T. 114, 113; W. 163, 157; Ta. 52, 47·5; B. f. g. 36, 37·5.

The younger bird is less blue, lacks the glistening blue tips of the feathers, and has much more black on the maxilla. Mr. W. J. F. Williamson has lent me a male from Pre, N. Siam, with the following measurements:—T. 131; W. 173; Ta. 50; B. f. g. 40 mm. It only differs from the Koh Lak adult (which could not be sexed, but is possibly a female on account of its smaller size) in having more black on the culmen and about the nostrils, in this respect approaching my immature specimen.

I have no example of *M. eugenii* from Pegu with which to compare these birds, but think they are undoubtedly of that species. In contrast with a series of *M. temmincki* from Simla, Dehra Dun, and South Shan States, I note one difference which has not hitherto been emphasized*: in *M. eugenii* (of Siam) the overlying colour of the plumage is blue, in *M. temmincki* violet or purplish. Other differences are:—

M. temmincki.

Bill shorter, narrower, shallower.
Maxilla blackish, the edge yellow broadening anteriorly.
Bright frontal area larger.
Shining tips of feathers more numerous.
Bright wing-patch larger.
Generally some white spots on wing-coverts.

M. eugenii.

Bill longer, broader, and deeper.
Maxilla yellow, only culmen and nasal region blackish.
Bright frontal area smaller.
Shining tips of feathers less numerous.
Bright wing-patch smaller†.
Apparently never white spots on wing-coverts.

The other continental forms of *Myiophoneus*, i. e. *cæruleus* of China, *insularis* of Formosa, and *horsfieldi* of India, all have black bills; while the races found in the Malay Peninsula, *dicrorhynchus*, *robinsoni*, and *crassirostris* (the

* Hume remarks in the original description of *M. eugenii*, however, "on the whole the bird is perhaps bluer and brighter" than *temmincki*.

† Sharpe (Cat. Birds, vii. p. 6) says that *M. eugenii* has no bright shoulder-spot, but this statement is not in agreement with accounts of other writers.

last being apparently a local form of *eugenii*), though having bills largely yellow, have also the feathers of the underparts very largely white, a difference that serves to distinguish them immediately from more northern birds.

†90. *Herpornis xantholeuca* Hodgs.

3 ♂, 3 ♀. Lat Bua Kao.

Iris dark; maxilla brown or horny; mandible fleshy; feet fleshy.

Males: T. L. 130, 125, 120; W. 68, 67, 66; B. f. g. 16, 15, 15.

Females: T. L. 125, 118, 118; W. 62, 62, 60; B. f. g. 15, 14.7, 14.4.

These specimens differ slightly from a series of *H. xantholeuca* of the Malay States in being a little duller above with greyer heads; they have paler ear-coverts, and the abdomen and throats are a shade purer white; in the latter respect they perhaps approach *H. x. tyrannula* Swinh. of Hainan and Formosa, which I have not seen (*vide* Hartert, Nov. Zool. xvii. p. 230).

TURDIDÆ.

†91. *Monticola solitaria philippinensis* P. S. L. Müll.

1 ♀ imm. Lat Bua Kao.

Iris dark brown; bill and feet blackish.

T. L. 227; W. 114.

†92. *Larvivora cyanea* (Pall.).

1 ♂ ad. Lat Bua Kao.

1 ♂ ad. Satahip near Cape Liant, S.E. Siam. Nov. 1916.

Iris dark; bill blackish, base of mandible pale fleshy or grey; feet fleshy.

T. L. 135, 138; W. 71, 72.

†93. *Copsychus saularis musicus* (Raffles).

Hartert, Nov. Zool. xvii. 1910, p. 235.

1 ♂ ad. Lat Bua Kao.

1 ♂ ad. Koh Lan, Inner Gulf of Siam. Oct. 1916.

Iris dark ; bill and feet black.

T. L. 215, 225 ; W. 97, 99.

The axillaries and under wing-coverts in both these birds are black or blackish at the bases with the distal portions white. In birds from the Malay States the black element is more extensive, so that my specimens appear intermediate between *C. s. musicus* of Sumatra and *C. s. saularis* of Bengal and northern Siam.

+ 94. *Kittacincla macrura macrura* (Gm.).

Hartert, Nov. Zool. ix. 1902, p. 572.

2 ♂ ad., 1 ♂ imm., 2 ♀ imm. Lat Bua Kao.

Iris dark ; bill black ; feet fleshy.

Adult males : T. L. 295, 302 ; W. 93, 94.

Both females have the abdomen slightly paler than the young male and conspicuously paler than the old males.

+ 95. *Pratincola torquata stejnegeri* Parrot.

Parrot, Verh. Orn. Ges. Bayern, viii. 1908, p. 124.

1 ♂. Lat Bua Kao.

Iris dark ; bill and feet black.

A young bird has a pale fulvescent throat and the top of the head like the back, the feathers with dark brown centres and sandy edges.

SYLVIIDÆ.

+ 96. *Sutoria sutoria* (Forst.).

1 ♀. Lat Bua Kao.

Iris umber-brown ; bill fleshy-brown ; feet yellowish-fleshy.

T. L. 110 ; W. 41.

+ 97. *Orthotomus atrigularis nitidus* Hume.

Orthotomus nitidus Hume, Stray Feathers, ii. 1874, p. 507 ; id. *op. cit.* iii. 1875, p. 325.

1 ♀. Lat Bua Kao.

Iris ochreous ; maxilla horny ; mandible fleshy ; tarsi brownish ; feet fleshy.

T. L. 103 ; W. 41.

I have compared this specimen with a series of females

from the Malay States (*flavoviridis* Moore, which needs comparison with Bornean birds) and find, as Hume recorded, that the rufous of the head is paler and the green of the rest of the upper-parts brighter and lighter. Though the presumed differences in the colour of the throat and neck do not hold good (Hume compared Tenasserim females with Malayan males), the two birds are undoubtedly subspecifically distinct.

+98. *Franklinia rufescens beavani* (Wald.).

1 ♂, 1 ♀. Lat Bua Kao.

Iris umber-brown and ochre-yellow; bill horny-brown and black; feet fleshy and yellowish-fleshy.

T. L. 112, 105; W. 42, 42.

+99. *Prinia inornata blanfordi* (Wald.).

3 ♂, 1 ♀. Lat Bua Kao.

Iris ochre-yellow to brownish-yellow; maxilla horny or brown; mandible fleshy or pinkish-grey; feet fleshy to brownish-fleshy.

T. L. 155-157, 144; T. 68, 63, 64, 60; W. 53.5, 53, 51.5, 50; B. f. g. 16, 16, 16, 15.

I have no material from Lower Burma with which to compare these specimens, and they do not entirely agree in the matter of colour with descriptions, which may be due to the somewhat worn state of their plumage. The female is rather brighter above and more buffy below than the others.

A fifth example, a male from the same locality, differs from those above in having a rather more robust bill which I have noted as "blackish-brown," while the irides were "raw-sienna": it is, perhaps, an older individual (T. L. 168; T. 68; W. 54; B. f. g. 16.4).

+100. *Phylloscopus superciliosus superciliosus* (Gm.).

3 ♂, 1 ♀ ad. Koh Lak.

Iris dark; maxilla brown; mandible yellow with black tip; tarsi brown; feet olive-yellow or brownish-yellow.

T. L. 110, 110, 105, 105; W. 56, 55, 53, 54.

† 101. *Phylloscopus fuscatus* (Blyth).

1 ♀. Lat Bua Kao.

Iris dark; bill black, base of mandible dull yellow; tarsi and feet brown, soles yellow.

T. L. 120; W. 54.

† 102. *Acanthopneuste tenellipes* (Swinh.).

3 ♂. Lat Bua Kao.

1 ♂, 1 ♀. Koh Lak.

Iris dark; maxilla brown; mandible fleshy with brown tip; feet fleshy, yellowish-fleshy, and bluish-brown.

T. L. 132, 128, 122, 120, 128; W. 58, 65, 57, 60, 61.

† 103. *Acanthopneuste occipitalis coronatus* (Temm. & Schleg.).

1 ♂. Lat Bua Kao.

1 ♀. Koh Lak.

Iris dark; maxilla horny or dark brown; mandible yellow; tarsi brown; feet yellowish.

T. L. 116, 121; W. 60, 59.

† 104. *Acanthopneuste borealis borealis* (Blas.).

2 ♀. Lat Bua Kao.

2 ♂. Koh Lak.

Iris dark; maxilla horny or dark brown; mandible dull yellow and brown; feet brown or olive, soles yellow.

(One female is recorded as having bill and feet plumbeous-black.)

T. L. 123, 127, 120, 123; W. 60, 61, 61, 64.

† 105. *Acanthopneuste borealis xanthodryas* (Swinh.).

2 ♂, 1 ♀. Lat Bua Kao.

2 ♂, 1 ♀. Koh Lak.

Iris dark; maxilla brown; mandible yellow; tarsi greenish- or brownish-yellow, olive-brown, brown; feet and soles yellowish.

T. L. 122, 120, 126, 127, 127, 117; W. 63, 61, 60, 65, 64, 60.

(I am indebted to Mr. H. C. Robinson for the identification of this and the next species.)

106. *Acanthopneuste lugubris* (Blyth).

3 ♂. Lat Bua Kao.

Iris dark; maxilla brown or horny; mandible yellow; feet yellowish or olive-brown, soles yellow.

T. L. 117, 115, 115; W. 57, 58, 55.

LANIIDÆ.

†107. *Hemipus picatus* Sykes.

2 ♂. Lat Bua Kao.

1 ♂. Koh Lak.

Iris dark; bill and feet black.

T. L. 140, 145, 137; W. 60, 61, 60.

This is apparently a very stable species, as I can find no tangible differences between birds from southern India (typical locality), Siam, and the Malay Peninsula.

†108. *Tephrodornis pelvica* (Hodgs.).

Tephrodornis pelvica Hume & Davison, Stray Feathers, vi. p. 205.

1 ♂, 1 ♀. Koh Lak.

Iris yellowish-grey (male), greenish-brown (female); maxilla black (male), brownish-black (female); mandible black (male), brownish-black, base fleshy (female); feet black (male), brownish-plumbeous (female).

T. L. 210, 200; T. 82, 80; W. 111, 109; Ta. 19, 18.5; B. f. g. 28, 28.5.

These examples are intermediate between topotypes from Nepal and the birds of the Malay States, of which a description will shortly appear.

†109. *Lanius cristatus* (Linn.).

1 ♀ imm. Tachin, Central Siam. - Oct. 1916.

T. 81; W. 76; Ta. 25; B. f. g. 20.5.

A young individual with the under-parts barred; very small, but apparently referable to this species.

†110. *Lanius nigriceps longicaudatus* Gould.

Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. 1. No. 8, 1913, p. 31.

2 ♀. Tachin, Central Siam. Oct. 1916.

Tail 162 (abraded), 140 (in moult); W. 93·5, 96·5.

This handsome Shrike was very common in the flat rice-lands of Central Siam, where numbers were observed perched on bushes, poles, and the telegraph-wires along the railway.

† 111. *Lanius collurioides* Lesson.

Grant, Nov. Zool. ix. 1902, p. 475; Hume, Stray Feathers, xi. 1888, p. 92; Gyldenstolpe, Journ. Nat. Hist. Soc. Siam, i. 1915, p. 167.

Lanius hypoleucus Blyth, Journ. Asiat. Soc. Bengal, xvii. 1848, p. 249; Hume, Stray Feathers, iii. 1875, p. 90.

1 ♀ subad., 2 ♀ imm., 1 ♂ imm. Lat Bua Kao.

Iris dark; maxilla horny or brown; mandible grey; feet black.

Females: T. L. 195, 180, 192; T. 86, 86, 85; W. 83, 84, 87; B. f. g. 20, 18, 19·4.

Male: T. L. 192; T. 84; W. 86; B. f. g. 18.

For comparison with the specimens enumerated I have four Burmese Shrikes from the Indian Museum collection. Two of them (a female from Kalaw, South Shan States, obtained in November, and an unsexed skin labelled "Burma"; wings 88 and 83 mm.) exactly agree in every respect with the description and figure of birds from Siam, which Gyldenstolpe has named *Lanius hypoleucus siamensis* (Ornith. Monatsber. 1916, p. 28; id. Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 40, pl. ii. fig. 2). The other two—unsexed specimens from Mandalay taken in October, wings 83 and 85 mm.—only differ in having the black of the frontal region continued over the occiput to meet the dark ear-coverts (in this respect exactly resembling the birds from Tenasserim, which Blyth named *hypoleucus* *), and in being a little darker

* "The entire crown nigrescent, passing gradually from the black of the forehead to dark ashy on the nape; the ear-coverts being uniformly coloured with the feathers superiorly adjacent; . . . the rump and upper tail-coverts of the same deep maroon colour as the back and scapularies."

on the back and upper tail-coverts. The last of the two is, perhaps, not fully adult, for, though it is not banded on the under surface, many of the feathers of the occiput and nape, which are very worn, are barred with greyish; the frontal plumes and lores are also whitish, whereas in the other bird they are quite black. It would seem, therefore, that the pale frontal plumes and lores and the black band confined to the lores are features of immaturity and have no sub-specific value; they are the characters on which Gyldenstolpe chiefly relies for the distinction of his race, together with a white wing-lining and dark bases to the feathers of the thighs—the last two characters are present in all the birds dealt with here.

My Siamese birds—three of which are immature with barred breasts, while the fourth, owing to the presence of pale shafts to the ear-coverts, is probably hardly fully adult—are superficially very different, but, in view of what Hume says with regard to *L. collurioides* (*t. s. c.* p. 92), I believe they must be regarded as referable to the typical form of that species:—"This species is very variable according to age. In a comparatively young bird the whole head and lores are iron-grey; the back, scapulars, etc., are a rather bright, not deep, ferruginous; while in the old adults the lores are jet-black, the head all but black, and the back, etc., the deepest and richest maroon. The differences in colour between the young and old in this species are far greater than between *L. cristatus* and *L. superciliosus*."

Anybody who has been unable to examine a large series of this Shrike, as in my case, or was unacquainted with Hume's statements, would undoubtedly regard my Siamese specimens as something distinct; the lack of black on the comparatively light grey heads, the pale backs, and slight amount of white on the outer tail-feathers are apparently very marked features, but, in view of Hume's observations, it seems necessary to look upon them as merely immature examples of *L. collurioides*.

The most adult of my birds has the frontal plumes and lores brownish to greyish-white; the head and nape

grey (intermediate between "mouse-grey" and "neutral-grey"); ear-coverts dusky-brown with pale shaft-stripes; and the feathers above and behind the eye dusky-brown and albescent; the back, from mantle to tail-coverts, is deep tawny; and the rufescent edges to the secondaries, tertiaries, and wing-coverts (except those of the primary coverts) are much less broad than in the Burmese birds. The outermost tail-feather is white, narrowly dusky along the dark shaft, the dusky colour expanding into an oblong patch near the tip; the next feather is dusky, merely tipped and edged with white, most broadly on the inner web; the remaining feathers are dusky-black with pale tips, which decrease in size towards the centre pair. The throat and sides of neck are almost white, but the rest of the under surface is suffused with tawny, deepest on the flanks. There is a large patch of white on the underside of the wing and a white speculum on the primaries. The younger birds are very similar, but the heads are spotted with albescent, the breasts are banded and the two outer tail-feathers are rufescent dusky only, edged with white. Specimens from northern Siam, apparently similar to mine, have been recorded by Gyldenstolpe as *L. collurioides*.

If Hume is correct as to the changes which *L. collurioides* undergoes through life, the above material illustrates very perfectly the gradations in colour which take place between youth and age.

Most ornithologists seem agreed that *L. hypoleucus* ("Tenasserim") is the same as *L. collurioides* ("Pegu"), but Gyldenstolpe regards it as sufficiently distinct to have a subspecies of its own.

DICÆIDÆ.

112. *Dicæum cruentatum siamensis*, subsp. nov. .

1 ♂ ad., 1 ♀ ad. Lat Bua Kao.

2 ♂ ad., 1 ♀ ad. Koh Lak.

Iris dark; bill and feet black.

Males: T. L. 90, 88, 88; W. 47·5, 47, 46; B. f. g. 11, 11,

11·3.

Females: T. L. 88, 90; W. 43, 44·5; B. f. g. 11, 11·2.

Types. Adult male and female collected at Lat Bua Kao, E. Siam, on 14 and 19 October, 1916.

Differs from *D. c. cruentatum* of Bengal and Assam in being much paler below, the under surface in both sexes being white washed with buffy, rather than buffy. From *D. c. ignitum* (Begbie), of the southern half of the Malay Peninsula, males differ in the same way but to a less degree, the buff colour on the under-parts of Malay birds being less deep than in the Indo-Burmese specimens, but markedly deeper than in the Siamese examples. All have the wing-coverts of the same colour—a glossy steel-blue or greenish steel-blue,—except some Malayan birds, in which the sheen is purplish; this latter feature is relied on by Hartert (Nov. Zool. xviii. p. 244) for distinguishing *ignitum*, but examples showing it are decidedly in the minority.

Hartert states that *D. c. coccinea* (Scop.), of southern China and Hainan, differs from the Indian form in having a larger bill and longer wings, while females have the upper-side more tinged with rusty—so, presumably, the under-parts are as in *D. c. cruentatum*. The Siamese specimens do not appear to be in any way larger than Indian or Malayan birds, so, apparently, they are not the same as *D. c. coccinea*.

In a large series of Malayan birds I find the wings of males to vary from 45 to 49 mm. (lengths of 46 and 47 being commonest), of females between 42 and 46 mm.; two males from the Malay States, with wings of 44.5 and 44.3 mm., on the strength of which Gyldenstolpe identified Siamese birds as *D. coccinea* (Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, p. 35), are decidedly minimum-sized specimens.

NECTARINIIDÆ.

113. *Cyrtostomus flammixillaris* (Blyth).

Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 33.

1 ♂ ad., 1 ♂ imm., 1 ♀. Lat Bua Kao.

1 ♂ ad. Tachin, Central Siam. Oct. 1916.

Adult males: T. L. 108, —; W. 49.5, 49.5.

Females: T. L. 110; W. 48.

This species extends through peninsular Siam to about Penang. It is very common on the Butang Group, west of the Langkawa Is., where it has the upper-parts much browner, less olive, and the abdomen much paler—a difference that is probably due to the action of sea-air.

Southern specimens, however, appear to run larger (wing 49–53), as all Gyldenstolpe's birds from northern Siam and Koh Lak have a wing-length of 49 mm. or less.

114. *Chalcoparia singalensis koratensis*, subsp. nov.

1 ♂ ad., 1 ♂ imm., 2 ♀ ad., 1 ♀ juv. Lat Bua Kao.

Iris crimson; bill black; feet olive, soles yellow.

Males: T. L. 112, 112; W. 52, 51·5; B. f. g. 13·8, 13·8.

Females: T. L. 105, 110, 112; W. 50·5, 50, 51; Ta. 14·6, 14·6, 15; B. f. g. 13·4, 13·5, 15.

Rather smaller than *C. s. singalensis**; the rufous of the breast terminating more sharply and not extending so far downwards; the abdomen of a considerably deeper yellow (male intense "lemon yellow," female intense "light greenish yellow," *Ridgway*), the abdomen of the female being of the same tone as the male of the typical form and much brighter than the corresponding female. Also females and young males are much paler above than corresponding southern birds, the upper-parts being "yellowish oil-green" against "dark Cerro-green" in fresh plumage.

Types. Adult male and female collected at Lat Bua Kao, E. Siam, on 15 October, 1916.

I have been able to compare four birds from Java (*Nectarinia phœnicotis* Temm.) and also a male from Sumatra with Malayan birds. The former have, unfortunately, been mounted and their colours are probably somewhat degraded, but, allowing for this, I do not find that birds from these three places differ in any respect

* *Chalcoparia singalensis* (Gm.), supposed originally to have come from Ceylon, is now known not to occur there, and Oberholser has therefore designated Malacca as the typical locality (Smithsonian Miscellaneous Collections, lx. No. 7, p. 21, footnote).

among themselves, so *phænicotis* Temm. should rank merely as a synonym of *singalensis*.

Measurements of *Chalcoparia singalensis singalensis*:—

Malay States, 6 ♂, 4 ♀.

Males: W. 52·5–54; B. f. g. 15–15·7.

Females: W. 51–52·5.

Sumatra, 1 ♂.

W. 54; B. f. g. 15.

Java, 2 ♂ ad., 1 ♂ imm., 1 ♀ ad.

Males: W. 51–55; B. f. g. 15.

Female: W. 52; B. f. g. 14·5.

Walden, writing of males from Moulmein, says (P. Z. S. 1866, p. 544), “when compared with a Sumatran skin they appear less brightly and richly coloured. In the latter bird the rufous of the breast and throat is deeper in tone and descends lower down; it is separated from the yellow of the abdominal region by a more trenchant line. In the Tenasserim species the rufous dies away into the yellow; in them also the bill is decidedly longer, while in all other dimensions they are inferior to the Sumatran bird.” Perhaps, therefore, Tenasserim birds represent a third race yet unnamed.

Oates states that the nestling resembles the female (Faun. Brit. Ind., Birds, ii. p. 372); but my young female differs in having the throat and fore-breast pure yellow, not rufous; and in having the frontal feathers and a fairly distinct supercilium extending behind the eye pale yellow also; the iris is brown.

MOTACILLIDÆ.

+115. *Motacilla alba leucopsis* Gould.

1 ♂. Lat Bua Kao.

Iris dark; bill and feet black.

T. L. 195; W. 87; Ta. 24.

+116. *Motacilla boarula melanope* Pall.

1 ♀. Lat Bua Kao.

Iris dark; bill dark brown; feet brown.

T. L. 185; W. 79; Ta. 18.

† 117. *Limonodromus indicus* (Gm.).

3 ♂, 1 ♀. Lat Bua Kao.

Iris dark; maxilla brown or black; mandible fleshy; feet brownish-grey.

T. L. 175, 167, 167, 179; W. 77, 77, 79, 76.

† 118. *Anthus cervinus* (Pall.).

1 ♀. Koh Lak.

Iris dark; maxilla black, edge at base yellow; mandible yellow, tip brown; feet brownish-fleshy.

T. L. 168; W. 82; Ta. 21·8.

The throat is only slightly tinged with vinous, but Mr. W. J. F. Williamson informs me that he has obtained birds at Bangkok in all stages of plumage.

† 119. *Anthus trivialis maculatus* Jerdon.

1 ♂, 3 ♀. Lat Bua Kao.

Iris dark; maxilla brown; mandible fleshy; feet fleshy.

T. L. 163, 164, 162, 160; W. 78, 80, 78, 77.

† 120. *Anthus richardi richardi* Vieill.

2 ♂, 1 ♀. Lat Bua Kao.

1 ♂, 1 ♀. Tachin, Central Siam. Oct. 1916.

1 ♂. Koh Lak.

Iris dark; maxilla horny or brown; mandible fleshy; feet fleshy-yellow or brownish-fleshy.

Males: T. L. 182, 177, —, 198; W. 88, 85, 93, 90; Ta. 30, 29, 29·5, 31.

Females: T. L. 197, —; W. 89, 90; Ta. 32, 31.

I do not think that any reliable records exist for the occurrence of this race south of Tenasserim.

† 121. *Anthus richardi malayensis* Eyton.

2 ♂, 2 ♀. Koh Lak.

1 ♀. Lat Bua Kao.

Iris dark; maxilla black or brown; mandible fleshy with dark tip; feet fleshy-yellow.

Males: T. L. 164, 158; W. 76, 80; Ta. 26, 26.

Females: T. L. 158, 155, 170; W. 79, 74, 80; Ta. 25·5, 26·5, 27·5.

The female from Lat Bua Kao, where otherwise only *A. r. richardi* was met with, is a trifle larger than the Koh Lak birds and rather more richly coloured above, with throat and underparts more fulvescent, but I do not think it can be other than a member of this race. The outer web of the penultimate tail-feather is black, while in the others it is white, but, as Sharpe has stated (Cat. Birds, x. p. 577), this is a peculiarity that frequently occurs in birds from the Malay Peninsula; and in a series collected south of Lat. 10° N. I have found that many birds possess this feature and show a considerable degree of variation in the amount of white on the inner web also.

A. r. striolatus Blyth does not seem to occur in the Malay Peninsula; of all the Pipits I have seen from there, one (apparently abnormal, though adult and fully plumaged) has a wing of 71 mm.; thirty (two of them much worn and bleached) have wings between 75 and 80 mm., and the wings of twelve (four much worn and bleached) range between 80 and 84 mm.

On the supposition that *A. r. rufulus* is confined to western and central India with Ceylon, whence I have no specimens, I have used Eyton's name for the Indo-Chinese and Malayan birds.

ALAUDIDÆ.

+122. *Alauda gulgula sala* Swinh.

? *Alauda peguensis* Oates, Stray Feathers, iii. 1875, p. 343.

Alauda gulgula sala Swinh.; Williamson, Journ. Nat. Hist. Soc. Siam, ii. 1916, p. 60.

1 ♀. Koh Lak.

Iris dark; maxilla black; mandible greyish-fleshy; feet fleshy, soles yellow.

T. L. 157; T. 48; W. 79; Ta. 24.5; B. f. g. 16.

This bird has not been met with so far south before, though it is common at Bangkok; a pair obtained there by Mr. W. J. F. Williamson have wings of 84 and 82 mm.

Compared with a male *A. g. gulgula* from the Calcutta

Bazaar (wing 84 mm.) and a specimen from Dehra (wing 88 mm.), the feathers of the top of the head of the Koh Lak and Bangkok birds are smaller and more acuminate with sandy edges, forming a finer chequering of dark and light; the nape and mantle are similarly coarsely patterned, and the breast-stripes and abdomen are as in the Calcutta bird (those on the Dehra specimen are more like indistinct spots than stripes, and the middle of the abdomen is lighter); but they differ from both the Indian specimens in having narrower, much more acuminate tail-feathers—a feature to which Mr. Stuart Baker has already drawn attention.

†123. *Mirafra cantillans williamsoni* Baker.

Baker, Bull. B. O. C. xxxvi. 1915, p. 9.

1 ♀. Lat Bua Kao.

Iris brown; maxilla brown; mandible dull brownish-fleshy; feet purplish-fleshy.

T. L. 150; T. (imperfect) 47; W. 70; Ta. 22; B. f. g. 14·5.

Mr. Williamson states that this bird is common at Bangkok (typical locality) in the fields and along suburban roadsides. I only met with the one example in eastern Siam; it was obtained in open ground covered with long grass, and when disturbed took short flights of twenty yards or so; I had to flush it several times before I could drop it into a little space of short grass where there was no risk of losing it.

†124. *Mirafra assamica marionæ* Baker.

Baker, Bull. B. O. C. xxxvi. 1915, p. 34.

1 ♀. Lat Bua Kao.

Iris hazel; maxilla brown with edges fleshy; mandible fleshy; feet fleshy.

T. L. 136; T. 40; W. 71; Ta. 23·2; B. f. g. 14·5.

Described from a pair obtained at Aynthia, central Siam, this race is apparently the south-eastern representative of *M. microptera* Hume, of Pegu. Compared with a pair of the latter obtained by Bingham at Mandalay (wings 74 & 71 mm.)

this example has the spots of the breast rather larger and extending farther towards the abdomen, while, owing to the darker edges of the feathers, the upper-parts are duller as stated by Baker. The "ill-defined nuchal markings" cannot be called whitish, as in the types of *M. a. marionæ*, and the pale portions of the feathers of the upper-parts, wings, and tail seem deeper in tone.

My specimen had the same habits and was obtained under the same conditions as *M. c. williamsoni*.

FRINGILLIDÆ.

†125. *Emberiza aureola* Pall.

1 ♂. Koh Kram, Inner Gulf of Siam. Oct. 1916.

Iris dark; maxilla black; mandible dull fleshy at base with black tip; feet brown.

T. L. 165; T. 81; W. 79.

PLOCEIDÆ.

†126. *Munia acuticauda* Hodgs.

1 ♂. Koh Lak.

T. 40; W. 48; Ta. 13.

STURNIDÆ.

†127. *Gracula javana intermedia* (Hay).

2 ♂, 1 ♀. Lat Bua Kao.

Iris brown; wattles yellow; bill blood-red with yellow tip; feet yellow.

T. L. 285, 280, 285; W. 159, 153, 161.

†128. *Graculipica leucocephala* (Gigl. & Salvad.).

1 ♂, 1 ♀. Lat Bua Kao.

1 ♂, 1 ♀. Koh Lak.

Iris yellowish-white to brown; orbital skin black; bill—proximal half brownish-yellow or orange, distal half yellow or pale green, extreme base black; feet orange.

Males: T. L. 250, 240; W. 130, 130.

Females: T. L. 225, 230; W. 117, 120.

Besides being smaller the females have darker heads than the males.

When freshly moulted the distal half of the tail-feathers is of the same fulvous colour as the rump-patch, but in worn plumage the colour on the tail has to a large extent faded to whitish.

The birds from eastern Siam have the pale portion of the tail considerably larger than have the others.

† 129. *Graculipica nigricollis* (Payk.).

1 ♀. Lat Bua Kao,

1 ♂. Koh Lak,

Iris (male) grey-white, (female) dark; orbital skin yellow; bill black; feet (male) stone-grey, (female) pale yellow and grey.

T. L. 300, 284; W. 156, 155.

The female from Lat Bua Kao has the feathers of the tail, wings, and back much more extensively and largely tipped with white than the male from Koh Lak, and the blackish bases of the tail-feathers are completely hidden by the lower coverts so that the tail appears white throughout below.

† 130. *Æthiopsar grandis* (Moore),

2 ♂, 1 ♀. Lat Bua Kao.

1 ♂. Koh Lak,

Iris brown; bill and feet yellow.

Males: T. L. 255, 250, 255; W. 129, 134, 135.

Female: T. L. 247; W. 124.

The frontal feathers of the male from Koh Lak when drawn forward extend considerably beyond the tip of the bill.

This bird goes about in large flocks, and near my camp at Lat Bua Kao there was a huge hollow clump of bamboo where hundreds used to spend the midday hours, so busy singing and amusing themselves that I used to creep into its centre without being noticed by birds which were only four or five yards away.

† 131. *Acridotheres tristis* (Linn.).

1 ♂. Tachin, Central Siam. Oct. 1916.

1 ♂. Koh Lak.

Iris greyish-brown spotted with yellow; bill and orbital skin yellow; feet yellow.

W. 129, 133; B. f. g. 30, 30.

† 132. *Sturnopastor superciliaris floweri* Sharpe.

Sturnopastor floweri Sharpe, Bull. B. O. C. vii. 1897, p. xvii.

1 ♀. Tachin, Central Siam.

Iris dirty white; bill yellow, base orange-yellow; feet brownish.

Tail 72; W. 127; Ta. 31; B. f. g. 38.

ORIOLIDÆ.

† 133. *Oriolus indicus* Jerdon.

2 ♂, 4 ♀. Lat Bua Kao.

Iris (males) dark; (females) brown, dull pink, crimson; feet plumbeous.

Males: T. L. 275, 265; W. 153, 148.

Females: T. L. 265, 260, 260*, 260*; W. 148, 145, 145*, 147*.

This Oriole was quite common in the fairly open country of eastern Siam, as I found it two years ago in the province of Chantabun (wing 153 mm.). The greatest wing-length I have found in a series of birds from the Malay Peninsula is 149 mm., but the species is not resident there.

† 134. *Oriolus melanocephalus himalayanus* Legge.

Legge, Birds of Ceylon, 1879, p. 358.

Oriolus melanocephalus Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. 1. No. 8, 1913, p. 34; id. *op. cit.* lvi. No. 2, 1916, p. 23.

5 ♂, 2 ♀. Koh Lak.

* Subadult.

Iris (males) crimson, (females) dark; bill (males) deep fleshy-pink, (females) black; feet plumbeous.

Males: T. L. 228, 220, 225, 220, 235; W. 134, 130, 129, 127, 124.

Females: T. L. 225, 220; W. 128, 122.

Very common in south-western Siam, but, though not met with by me in the east or south-east, an example was obtained near Korat in January 1912 by Gyldenstolpe.

DICRURIDÆ.

† 135. *Chibia hottentotta* (Linn.).

2 ♂, 2 ♀. Lat Bua Kao.

Iris brown; bill and feet black.

Males: T. L. 310, 322; W. 164, 166; B. f. g. 38·5, 39·5.

Females: T. L. 300, 315; W. 149, 151; B. f. g. 36·5, 37·0.

The males are much more iridescent above and have the beautiful shoulder-hackles longer, while the outer tail-feather is longer and more curled than is the case with the females; but as these latter have the abdomen and thighs rather greyish it is possible that they are not fully matured.

136. *Dicrurus annectens siamensis*, subsp. nov.

— 1 ♂ ad., 1 ♀ ad. Koh Lak, S.W. Siam. 10 & 15 Nov. 1916. (*Types*.)

1 ♀ ad., 1 ♂ imm. Lat Bua Kao.

1 ♂ imm. Tachin, Central Siam. Oct. 1916.

Iris crimson or brown; bill and feet black.

Adults: T. L. 285, 275, 275; T. 142, 142, 138; W. 142, 144, 138; Ta. 21, 21, 20; B. f. g. 27, 26·5, 27.

Differs from both *D. a. annectens* (Hodgs.) of the Himalayas and from Malay Peninsula birds, which have been named *affinis* by Blyth (Journ. Asiat. Soc. Bengal, xi. 1842, p. 174), in having the bill very much smaller in all dimensions. Breadth at nostrils 8·7 mm.; height at chin 8·5 or less.

† 137. *Buchanga atra longus* (Bp.).

Dicrurus longus Bp. Consp. Av. i. 1850, p. 352.

2 ♀ ad. Tachin, Central Siam. Oct. 1916.

1 ♂ ad., 1 ♂ subad., 1 ♀ imm. Koh Lak.

Iris crimson or brown; bill and feet black.

Females: T. L. —, —; T. 158, 156; W. 129, 128; Ta. 20, 19.5; B. f. g. 22.5, —.

Males: T. L. 284, 275; T. 157, 146; W. 128, 125; Ta. 20, 20; B. f. g. 24, 23.5.

I have compared these birds with examples from Java, and think they must be ranked with the form occurring in that island; the bills appear to be a little smaller, but not sufficiently so to justify separation—at any rate, on the material available.

It is interesting to note that while the Siamese birds are the same as those of Java the Burmese are, judging by Oates's description ('Birds of Burma,' i. p. 218), indistinguishable from *D. a. atra* of southern India, examples of which are before me, and from which *longus* is only separable on account of its somewhat shorter wing (129 mm. against 143 mm.) and the absence of any white rictal spot.

Siamese birds do not need reference to the larger race *albirictis* Hodgs., from the Himalayas, nor to *cacoetha* Swinh., of southern China, as the last-named differs at a glance from Indian forms through having a larger, more powerful bill but shorter wings (*vide* Hartert, Nov. Zool. xviii. p. 249).

† 138. *Buchanga leucophæa* (Vieill.).

Buchanga cinerea mouhoti Walden, Ann. & Mag. Nat. Hist. (4) v. 1870, p. 220.

2 ♂ subad. Lat Bua Kao.

1 ♀ ad. Koh Lak.

Iris (males) hazel and orange, (female) crimson; bill and feet black.

Males: T. L. 272, 277; W. 129, 136.

Female: T. L. 285; W. 138.

The males have the tail-coverts faintly tipped with whitish. I have compared these birds with a recently collected series of *B. leucophæa* (*cinerea* auct.) from Java and cannot detect any differences. The colour is quite the same and, though the Javan birds are smaller on the whole, the series yet contains three equal in size to the Siamese.

+139. *Dissemurus paradiseus paradiseus* (Linn.).

Edolius rangoonensis Gould, P. Z. S. 1836, p. 5*.

Edolius cristatellus Blyth, Journ. Asiat. Soc. Bengal, xi. 1842, p. 171 (Tenasserim Coast).

Dissemurus paradiseus Hume & Davison (*partim*), Stray Feathers, vi. 1878, pp. 219-222.

3 ♂ ad., 2 ♂ subad., 1 ♀ imm. Lat Bua Kao.

Iris crimson or brown; bill and feet black.

Males: W. 161, 157, 155, 154, 154; B. f. g. 36, 38, 34, 36, 35.

The type of *Cuculus paradiseus* Linn. came from Siam, and these specimens may be regarded as practically topotypes.

In the example showing greatest development of the crest the length from the nostrils to the tips of the longest feathers is almost equal to the length of the bill from gape; when pressed down the longest crest-feathers about reach the occiput, while their greatest length from root to tip, when straightened, is 33 mm.

One rarely obtains truly adult examples of this Drongo, but I regard as practically adult, birds having black abdomens which show scarcely any white tips to the feathers there; as subadult those in which the whitish tips are numerous; and as immature specimens those in which the abdomen and flanks are greyish.

A crimson iris does not always seem to go with immaculate plumage, nor a brown one certainly indicate immaturity; only one of this series has the iris red, and the bird is considerably more white-barred than are other specimens with brown irides; its crest is also much smaller.

* Founded on a crestless specimen, but Rangoon birds have a crest and are probably members of the present race.

+ 140. *Dissemurus paradiseus malayensis* (Jerdon).

Edolius malayensis Jerdon, Birds of India, i. 1862, p. 438.

Dissemurus paradiseus Hume & Davison (*partim*), Stray Feathers, vi. 1878, pp. 219-222.

1 ♀ ad. Koh Lak.

Iris brown; bill and feet black.

W. 148; B. f. g. 32.

The northern Malayan race of Paradise-Drongo seems first to have been definitely separated by Blyth as *E. malayensis*, a name first published (*in passim*) with a description by Jerdon and since overlooked.

It is a good subspecies and differs from *D. p. paradiseus* in its smaller size, smaller crest, and in having the metallic sheen of the upper-parts less green, more purplish.

The examination of a large series from the Malay Peninsula shows that this race extends down to about Lat. 4° N., south of which birds, though similar in other respects, become practically crestless, the frontal feathers no longer assuming the form of a backward-curving longitudinal ridge, but presenting merely a tufted appearance but little more developed than the frontal feathers of *Bhringa remifer*. These latter birds should stand as *D. p. platurus* (Vieill.), which is a species of crestless Paradise-Drongo based on material of unknown provenance; but as Tweeddale ('Ibis,' 1877, p. 315) has adopted the name for Malaccan and Sumatran birds, is it available for the small, practically crestless race of the southern extremity of the Malay Peninsula?

These differences have been well demonstrated by Hume and Davison, but though they recognised *D. p. platurus* (*t. c. s.* p. 220) and clearly indicated the difference between birds occurring north of Mergui and those found south of that place, they yet "lumped" both forms under the name *D. p. paradiseus*.

CORVIDÆ.

† 141. *Corvus macrorhynchus* Wagl.

Corvus macrorhynchus and *C. insolens* Gyldenstolpe, Kungl. Sv. Vet.-Akad. Handl. l. No. 8, 1913, p. 18.

Corvus macrorhynchus and *C. coronoides* Gyldenstolpe, *op. cit.* lvi. No. 2, 1916, pp. 16, 160.

1 ♂. Lat Bua Kao.

Iris dark; bill and feet black.

T. L. 505; T. 188; W. 308; B. f. g. 61.

This specimen only differs from a series of *C. macrorhynchus* from the Malay Peninsula (wings 303–355 mm.) in having the green sheen of the outer primaries and their coverts and the purple gloss of the rest of the upper-parts much duller. It is possibly nearer the Indian form *C. m. levaillanti* than typical *macrorhynchus*, but as I have no material of the former for comparison I have not attempted to place it subspecifically. Stresemann's recent paper on Crows is also unavailable at present.

We found Crows common everywhere in Siam, and it was as much on account of this as of their entertaining manners that I refrained from shooting them, while my collectors carefully ignored them since they are unpleasant to skin because of the lice they swarm with.

They associate with Vultures in a most intimate manner. I have seen single individuals of each species going about in company and also flocks of both, the Vultures being often both red- and black-necked birds together. One could see Crows and Vultures feeding on the same garbage in a most friendly way, though, if a Vulture fancied a small bit that the Crow was engaged with, the latter bird left it at once; if they are disturbed all fly away in company or perch mingled together on some neighbouring tree.

142. *Urocissa occipitalis magnirostris* Blyth.

Psilorhinus magnirostris Blyth, Journ. Asiat. Soc. Bengal, xv. 1846, p. 27.

2 ♂, 1 ♀. Lat Bua Kao.

Iris brown; bill and feet blood-red.

T. L. 640, 650, 580; T. 400, 408, 365; W. 209, 205, 194; Ta. 52, 50, 48; B. f. g. 42, 45, 40.

The Calcutta Museum has lent to me three specimens of *U. o. occipitalis* collected by Scully in the Nepal Valley in 1877, and the type of *U. o. magnirostris* from the Yamadong Hills, Arakan. These examples do not confirm Sharpe's descriptions in the 3rd volume of the 'Catalogue of Birds,' nor Oates's opinion that the latter name has no claims to recognition ('Birds of Burma,' i. p. 401).

Cat. Birds, pp. 69 and 71. The outer webs of the primaries of *magnirostris* are tipped with white and more extensively so than in *occipitalis*.

Id. p. 70. There is no pale patch on the inner webs of the lower tail-feathers above the black subterminal band in the Nepal birds, and in stating that it is present in most examples of *occipitalis* Sharpe may have taken too comprehensive a view of that race.

The bill of *magnirostris* is considerably larger than that of any of the Nepal birds (*vide* also Hume, 'Stray Feathers,' iii. p. 144), and the white tips of the upper pair of tail-feathers are about half an inch longer.

The Siamese specimens agree with *magnirostris* in the length of the white tail-tips, in the presence of pale patches on the inner webs of the lower tail-feathers, in having larger white tips to the outer webs of the primaries, and in the broader subterminal bands to the upper tail-coverts. One of the specimens has the bill of the same length as the type of *magnirostris*, but scarcely so broad and deep; in the others the bills are smaller and more like those of the Nepal birds*.

The under surface, axillaries, inner sides of wings, and edge of most of the primaries in my specimens are considerably tinged with buff. These features are not mentioned in descriptions hitherto and may only be present in living birds and fresh skins; they are not to be seen in the

* The "great naked space" round the eye of *magnirostris* (type) has a few scattered feathers therein and is the result of accident or bad preservation, the base of the mandible on one side being also denuded.

Calcutta specimens, but, like the blue colour which has largely disappeared, may have faded with age.

† 143. *Garrulax moniliger mouhoti* Sharpe.

Garrulax mouhoti Sharpe, Cat. Birds, vii. 1883, p. 443 ; Williamson, Journ. Nat. Hist. Soc. Siam, ii. 1916, p. 59.

2 ♂. Lat Bua Kao.

Iris ochre-yellow ; bill black with grey tip ; feet fleshy-grey.

T. L. 290, 275 ; T. 122, 118 ; W. 129, 123 ; Ta. 39, 39 ; B. f. g. 30, 30 ; culmen 28, 27.

G. mouhoti was based by Sharpe on birds from Cambodia : the typical locality of *G. moniliger* Hodgs. is Nepal. Sharpe, with specimens before him from Nepal to north-west Assam and others from Pegu and Tounghoo, recorded all (*tom. cit. supra*) as *moniliger*, though noting the differences in colour of the tail-tips : north-western birds white tips, south-eastern birds buff tips*. A further difference has been pointed out by Oates (Faun. Brit. Ind., Birds, i. p. 81), who states that in Himalayan birds the ear-coverts are black with a white patch in the middle, while Burmese birds have pure white ear-coverts. It is evident that the south-eastern birds comprise a good subspecies which requires recognition.

Sharpe, while noting the characters of the southern Burmese birds and recording them as *moniliger*, immediately afterwards recognised three Cambodian birds as a distinct form and described it under the name of *Garrulax mouhoti* ; and until a good series is available to prove the differences, if any, between Cambodian birds and others ranging thence to Lower Burma, I propose to regard all as belonging to one race and call it *Garrulax moniliger mouhoti*.

The description of *mouhoti* applies perfectly to my two birds, except that I do not see the "indistinct stripe or shade of grey becoming blacker over the eye" which should separate the white eyebrow from the crown. In the larger

* These tips are not the accompaniment of fresh plumage only ; my birds are moulting and the tips of the old ragged feathers are just as buffy as those newly appearing.

specimen the frontal feathers are buffy-white, becoming white over the eye; in the smaller, the forehead is buffy-white for almost 7 mm., some of its posterior feathers being partly coloured like the crown; it has also the sides of the body considerably more fulvous than the other.

Of specimens lent to me by the Indian Museum, examples from Darjeeling (2), Bhamo, and Thayetmyo have white-tipped tails and white centres to the black ear-coverts, which are continuous with the pectoral band; but a skin from the lower Irrawaddy has buff tips to the tail-feathers and the ear-coverts white, dusky feathers occurring only between them and the white eyebrow, as in Siamese birds.

†144. *Garrulax leucolophus diardi* (Less.).

Garrulax leucogaster Walden, P. Z. S. 1866, p. 549.

1 ♂ ad., 2 ♀ ad., 1 ♀ subad., 1 ♀ juv. Lat Bua Kao.

2 ♀ subad. Koh Lak.

Iris brown; bill black; feet bluish-brown or black.

Male: T. L. 305; T. 126; W. 135; Ta. 45; B. f. g. 35.

Females: T. L. 310, 300, 305; T. 125, 124, 122; W. 132, 128, 133; Ta. 44, 45, 46; B. f. g. 34, 32.5, 33.5.

The Koh Lak birds are much smaller than the other sub-adult specimen (wings 122, 120 mm.), but these three only differ from old birds in the reduced amount of ashy on the hind neck. In the young individual, however, the wings are suffused with the colour of the mantle and the middle of the body below is much washed with brown.

I found these birds going about in parties, moving quickly through the undergrowth. One of a flock that was brought down wounded was badly mobbed by its companions as it lay on the ground.

†145. *Crypsirhina varians* (Lath.).

3 ♂ ad., 2 ♂ imm. Lat Bua Kao.

1 ♂ ad. Tachin, Central Siam. Oct. 1916.

2 ♂ ad., 2 ♀ ad. Koh Lak.

Iris pale blue; bill and feet black.

Males : T. L. 335, 330, 330, 330 *, 330 *, —, 330, 327 ;
W. 117, 118, 114, 115 *, 115 *, 114, 114, 115.

Females : T. L. 335, 310 ; W. 116, 114.

The two immature birds, though of full size, are brownish-black in colour with the green metallic sheen present on back, wings, and tail, but much lacking in intensity.

The favourite resting-places seemed to be the tops of high bamboos.

XII.—*Some Additions and Corrections to the B. O. U. List of British Birds.* By the Committee appointed to draw up the List. †

At the General Meeting of the British Ornithologists' Union, held on March 14 last, the following resolution proposed by the Committee was passed unanimously :—

That the Sub-Committee who edited the new edition of the B. O. U. List of British Birds be re-appointed, with power to add to their number, to make the necessary additions and corrections that from time to time may become necessary to the list and to publish them in 'The Ibis'.

Since the date of the publication of the second edition of the B. O. U. List of British Birds, a certain number of species have been added to the British List.

There are also some corrections in nomenclature which require to be made. Most of these have been pointed out to us by kindly critics, and we are glad to record them here.

We have not attempted to deal with other criticisms of general method or of minor errors in this place, but have only made such corrections as were obviously necessary.

It is gratifying to the Committee to observe that the Authors of the 'Hand-List of British Birds' have recently

* Immature birds.

† Separate copies of this paper for binding in with the B. O. U. List can be obtained from Messrs. Wm. Wesley & Son, 28 Essex Street, Strand, post free for sixpence.

resolved to rehabilitate the genera *Hirundo* and *Podiceps* to their old places as the correct generic names for the Swallow and the Grebes respectively, thus bringing the nomenclature of these well-known birds into agreement with that in the B. O. U. List.

The following additions and alterations will have to be made in the B. O. U. List.

p. 38. Add :—

Calandrella brachydactyla longipennis.

Eastern Short-toed Lark.

Alauda longipennis Eversmann, Bull. Soc. Imp. Nat. Moscou, xxi. 1848, p. 219: Songarei (*i.e.* Western Mongolia).

Mr. Eagle Clarke (Scottish Nat. 1915, pp. 100-1) has had sent to him a Short-toed Lark, which proves to be an example of this race. It was obtained at Fair Isle on 11 November, 1907. It must, therefore, be added to the British List.

This form of the Short-toed Lark takes the place of the typical race in Central Asia from Transcaspia to Tibet and winters in India.

p. 39. Transfer from p. 326 :—

Melanocorypha calandra. Calandra Lark.

Mr. J. B. Nichols (Brit. Birds, x. 1917, p. 254) states that two examples of this species were shot near St. Leonards, Sussex, on 16 & 17 May, 1916, out of a small party of five, and that the birds were examined in the flesh by Mr. Ruskin Butterfield. The species must, therefore, be transferred from the hypothetical to the regular list of British Birds.

p. 41. For *Motacilla boarula* read

Motacilla cinerea.

Motacilla cinerea Tunstall, Orn. Brit. 1771, p. 2.

It now seems clear that Scopoli's name *M. boarula* applies not to the Grey but to the Blue-headed Wagtail (*Motacilla*

flava Linn.) or one of its forms. The oldest name for the Grey Wagtail seems, therefore, to be Tunstall's *M. cinerea*, founded on the "Grey Water Wagtail" of Pennant's 'British Zoology,' folio ed., 1766, p. 105 (*cf.* Brit. Birds, ix. 1915, p. 3).

p. 59. Insert:—

Parus cristatus mitratus.

Parus mitratus Brehm, Handb. Naturg. Vög. Deutschl. 1831, p. 467: Germany.

Parus cristatus mitratus Witherby, British Birds, v. 1911, p. 110.

The Crested Tit killed at Yarmouth, Isle of Wight, previous to 1840 (Kelsall & Munn, B. of Hants, p. 40) is stated by Mr. Witherby, who has examined the specimen, to be identical with this subspecies, which breeds in Central Europe south to the Pyrenees and Alps.

p. 65. Add:—

Sylvia rueppelli. Rüppell's Warbler.

Sylvia ruppeli Temminck, Pl. Col. iii. pl. 245, fig. 1, 1823: Kandia (but more probably from the Red Sea or Egypt, *cf.* Cretzschmar, Atlas, p. 29).

Found breeding in Greece and Asia Minor, and wintering in north-east Africa. Two examples of this species are stated to have been obtained at Baldslow, near Hastings, Sussex, 5 May, 1914 (Ford-Lindsay, Brit. Birds, viii. 1914, p. 93).

p. 74. For *Acrocephalus streperus* read

Acrocephalus scirpaceus.

Turdus scirpaceus Hermann, Observ. Zool. 1804, p. 202: Alsace.

The necessity for this change was pointed out by Dr. Hartert (Brit. Birds, xi. 1917, p. 2), as Hermann's name is undoubtedly valid and has thirteen years' priority over that of

Vieillot. The change is much to be regretted, but must, we fear, be accepted.

p. 76. Add :—

Acrocephalus arundinaceus orientalis.

Eastern Great Reed-Warbler.

Salicaria turdina orientalis Temminck & Schlegel, Fauna Japon., Aves, 1847, p. 50, pl. xx B: Japan, Borneo, &c.

Mr. J. B. Nichols (British Birds, x. 1917, p. 254) records the occurrence of this form of the Great Reed-Warbler. A male example was picked up dead in West St. Leonards, 24 August, 1916, and has since been mounted. It was examined by Mr. Ogilvie-Grant, Dr. Hartert, and Mr. Witherby, who all agree with the identification. This form of the Great Reed-Warbler breeds in eastern Siberia and northern China, and winters in the Andamans, the Malay Peninsula, Malay Archipelago, and Celebes.

p. 78. Add :—

Luscinola melanopogon. Moustached Warbler.

Sylvia melanopogon Temminck, Pl. Col. iii. pl. 245, fig. 2, 1823 : near Rome.

An example of this species, killed near St. Leonards-on-Sea, Sussex, on 12 April, 1915, is recorded by Mr. H. W. Ford-Lindsay (British Birds, ix. 1916, p. 197).

This Warbler's usual range extends through southern Europe from Spain to Hungary, and it is also found in Egypt.

p. 78. Add :—

Hypolais pallida. Olivaceous Warbler.

Curruca pallida Ehrenberg in Hemprich & Ehrenberg, Symb. Phys. fol. bb, 1833 : Egypt and Nubia.

Mr. Thomas Parkin (British Birds, ix. 1916, p. 198) states that a male example of this species, killed near

Hastings on 20 May, 1915, was brought to him in the flesh by Mr. G. Bristow.

This Warbler breeds in south-east Europe, Egypt, and Central Asia from Dalmatia to Turkestan; it winters in east and north-east Africa, southern Arabia, and perhaps in Baluchistan.

p. 84. For *Phylloscopus superciliosus* read

Phylloscopus humei præmium.

Reguloides humei præmium Mathews & Iredale, Austral. Av. Rec. iii. 1915, p. 44: Russia.

In the 'Austral Avian Record,' vol. iii. 1915, p. 44, Messrs. Mathews & Iredale pointed out that *Motacilla superciliosa* Gmelin, 1789, was pre-occupied by the use of the same name by Boddaert in 1783 (Tabl. Planch. Enlum. p. 43 for pl. 686) for an American Warbler now known as *Dendroica dominica*, and proposed for Gmelin's species the name given above.

p. 88. For *Turdus fuscatus* read

Turdus eunomus.

Turdus eunomus Temminck, Pl. Col. ii. pl. 514, 1831: Japan.

Mr. Iredale has pointed out (British Birds, xi. 1917, p. 3) that *Turdus fuscatus* Pallas, 1827, is invalidated by *Turdus fuscatus* Vieillot (Hist. Nat. Ois. Amér. Sept. ii. pl. 57 bis, 1808: Porto Rico and S. Domingo) for a Mocking Thrush now known as *Cichlherminia fuscata*, and that the next oldest available name as given above must be used for the Dusky Thrush.

p. 104. Add:—

Ænanthe leucura syenitica.

North African Black Wheatear.

Saxicola syenitica Heuglin, Journ. Ornith. 1869, p. 155: Egypt.

A male of the Black Wheatear taken by Mr. Bristow on

7 June, 1915, at Pevensey Sluice, Sussex, was examined by Mr. Witherby and identified by him as an example of the North African form of the species (British Birds, ix. 1916, p. 200).

The usual range of this form of the Black Wheatear is in North Africa from Morocco to Egypt.

p. 110. For *Muscicapa collaris* read

Muscicapa albicollis.

Muscicapa albicollis Temminck, Man. d'Orn. 1815, p. 100 : Germany.

Muscicapa collaris Bechstein, 1794, is invalidated by *Muscicapa collaris* Latham (Index Orn. 1790, p. 471) which refers to an African bird now known as *Platystira cyanea* ; the next available name appears to be the one given above.

p. 142. For *Aquila fusca* read

Aquila clanga.

Aquila clanga Pallas, Zoogr. Rosso-Asiat. i. 1827, p. 351 : Russia.

Aquila fusca Brehm, 1823, is pre-occupied by *Aquila fusca* Dumont, Dict. Sci. Nat. i. 1804, p. 344, used for a bird which appears to be the Golden Eagle in immature plumage (cf. Iredale, Ibis, 1915, p. 388). The name of the Spotted Eagle should, therefore, be *Aquila clanga* Pall., as formerly pointed out by Blanford (Ibis, 1894, p. 286).

p. 162.

The American Brent Goose appears to be merely a colour variation of the European form : both dark- and light-breasted Brents nest together. In any case the name *glaucogaster* cannot be used for the American form, as the bird so called by Brehm was a dark-breasted European individual. The type is not in the Tring Museum and has been lost sight of, but Brehm's description is quite clear.

p. 178. For Genus *Glaucion* read

Genus **GLAUCIONETTA** Stejneger, Proc. U.S. Nat. Mus. viii. Sept. 14, 1885, p. 409. Type by original designation, *G. clangula* (Linn.).

The generic term *Glaucion* Kaup, 1829, is invalidated by *Glaucion* Oken, Lehrb. der Natur. iii. pt. 1, 1815, p. ix, used for a mollusc.

For the exact date of publication of this generic name the authors are indebted to the courtesy of Mr. Charles W. Richmond of Washington. The date of the publication of *Charitonetta* Stejneger, Bull. U.S. Nat. Mus. No. 29, p. 163, type *Anas albeola* Linn., is December 16, 1885. If, therefore, the Golden-eyed and the Buffel-headed Ducks are considered congeneric, *Glaucionetta* must stand for them both as the oldest generic name.

p. 232. Add :—

Totanus incanus brevipes. Grey-rumped Sandpiper.

Totanus brevipes Vieillot, N. Dict. d'Hist. Nat. vi. 1816, p. 410: probably Timor.

Two examples, male and female, of this Sandpiper were shot at Rye Harbour on 23 & 27 September, 1914, and are recorded by Mr. H. W. Ford-Lindsay (British Birds, ix. 1916, pp. 205, 208).

This bird probably breeds in eastern Siberia and Kamchatka, and ranges south in winter as far as New Guinea and Australia.

p. 244. Add :—

Ægialitis semipalmata. The Semi-palmated
Ringed Plover.

Charadrius semipalmatus Bonaparte, Journ. Acad. Nat. Sci. Philadelphia, v. 1825, p. 98: Coasts of New Jersey.

In 'British Birds,' x. 1917, p. 254, Mr. Thomas Parkin records the capture of an example of this species on 18 April, 1916, at Rye in Sussex.

This Plover is an American species breeding in Canada from Yukon to the St. Lawrence and winters from the southern United States south to Patagonia. It has been met with in Greenland, Bermuda, and Siberia, but not previously in Europe.

p. 246. For *Ægialitis dubia* read

Ægialitis dubia curonica.

. *Charadrius curonicus* Gmelin, Syst. Nat. i. pt. 2, 1789, p. 692 : Courland, Russia.

Dr. Hartert and Miss Jackson (*Ibis*, 1915, p. 532) distinguish several races of the Little Ringed Plover. That from the Philippines and eastern Asia retains the typical name *Ægialitis dubia*, while the western Palæarctic form becomes *Ægialitis dubia curonica*.

p. 269. For *Sterna fuliginosa* read

Sterna fuscata.

Sterna fuscata Linnæus, Syst. Nat. 12th ed. i. 1766, p. 228 : S. Domingo.

There can be no doubt that the A. O. U. Committee (*Check-List*, 3rd ed. 1910, p. 46) and Mr. Iredale (*Ibis*, 1914, p. 437) are correct in identifying Linnæus' *Sterna fuscata*, founded solely on a young bird described and figured by Brisson, with the Sooty Tern. Linnæus' name should, therefore, be accepted.

p. 280.

Fratercula arctica.

Dr. Hartert (*British Birds*, xi. 1917, p. 5) regards the Puffins breeding on the British coasts including the Faroe Islands as a distinct subspecies, under the name *F. a. grabæ* Brehm. Some further correspondence on the matter will be found in '*British Birds*,' xi. pp. 162, 214, and the Committee consider that on the evidence given it is not advisable to recognize the British Puffin as a distinct race.

p. 288. Add:—

Puffinus kuhli borealis.

North Atlantic Great Shearwater.

Puffinus borealis Cory, Bull. Nuttall Orn. Club, vi. 1881, p. 84: off coast of Massachusetts.

A Shearwater washed ashore near St. Leonards, Sussex, 14 March, 1914, has been identified by Mr. Witherby with the North Atlantic form of the Great Shearwater (*British Birds*, ix. 1916, pp. 203, 208).

This subspecies is the one recently named *Puffinus kuhli fortunatus* by Mr. Bannerman; it breeds on the Azores, Madeira group, and Canaries, and is found off the north-east coasts of the United States in autumn. It has also occurred on the coasts of Portugal.

p. 289. Add:—

Puffinus l'herminieri boydi.

Cape Verde Little Shearwater.

Puffinus l'herminieri boydi Mathews, *Birds Australia*, ii. 1912, p. 70: Cape Verde Islands.

Two Little Shearwaters, one picked up at Pevensy, 4 December, 1914, the other caught alive at West St. Leonards on 2 January, 1915, were examined by Mr. Witherby and pronounced to belong to the Cape Verde form of the Little Shearwater (*British Birds*, ix. 1916, pp. 201, 208).

This form, apart from the present record, is only known from the Cape Verde Islands.

p. 323. For *Serinus icterus* read

Serinus mozambicus.

Fringilla mozambica P. L. S. Müller, *Syst. Nat. Suppl.* 1776, p. 163: Mozambique.

Mr. Iredale informs us that the oldest name for this species is the one quoted above; both it and *Fringilla ictera* Bonn. & Vieill. 1823 are based on the figure in 'Planches Enluminées,' pl. 36. figs. 1 & 2.

p. 329. For *Monticola cyanus* read

***Monticola solitarius*.**

Turdus solitarius Linnæus, Syst. Nat. 1758, p. 170 : Italy (ex Willughby).

The oldest name of the Blue Rock-Thrush is that of the 10th ed. of Linnæus Syst. Nat.; in the 12th ed. it was re-named *Turdus cyanus*.

p. 351. For *Porphyrio porphyrio* read

***Porphyrio madagascariensis*.**

Gallinula madagascariensis Latham, Index Orn. Suppl. 1801, p. lxxviii : Madagascar.

Dr. Hartert (Nov. Zool. xxiv. 1917, p. 265) has recently shown that there is no justification for using the name *Porphyrio porphyrio* (Linn.) for this African species, and that the first available name for it is that of Latham.

XIII.—A Note on the Structure of the Feather.

By JOHN S. GLADSTONE, F.Z.S..

(Plates V–VII.)

For some time past I have been engaged on the photographic analysis of a feather, and my attention has been concentrated on the glazed portion of the underside of the primaries of certain birds. Chandler (University of California Publications, Zoology, xiii. 1916, pp. 243–446), referring to the subject states:—

“The ventral edges of the rami are produced into horny keels usually with no evident cell structure, known as the ventral ridges. Although in the great majority of birds the ridge forms only a narrow, inconspicuous border for the ramus, in a few birds it is extraordinarily developed as a very thin translucent film, which bends distally and overlaps the following

ramus, giving a smooth, glazed appearance to the under surface of the feather which is conspicuous at the most casual glance."

My examination of the ventral ridge indicates that when present in complete form it extends about half the length of the barbs. It is widest at the rhachis end and tapers to a fine point. Prior to perusal of Chandler's work I named this cover of the space between the barbs as the "tegmen," which for convenience I continue to use, as there is a considerable difference between a ventral ridge and a fully-developed tegmen.

The tegmen is particularly developed in water- and game-birds as well as in the Turkey. The Heron has a dark brown ventral ridge which, though not large enough to form a complete tegmen, is sufficient to create the general appearance of tegmenous structure, but instead of a glazed surface it resembles brown velvet when the feather is held at a suitable angle to the light. I find this Heron-like structure is not uncommon, but as it does not come under the head of "a tegmen" the subject has not been specially studied.

I find three types of barbs:—

1. The flat barb, which may or may not have a ventral ridge and gives no indication whatever of a tegmen.
2. The curved barb, which, having a coloured ventral ridge, gives a tegmenous appearance to the underside of a feather.
3. The flat or curved barb with fully-developed tegmen.

Type 1 includes the Passeres, Picariæ, Columbæ, Fulicariæ, Alectorides, and Pygopodes.

Type 2 is represented by the Accipitres, Steganopodes, Herodiones, Pteroclitides, and Limicolæ.

Type 3 is found in the Striges, Anseres, Gallinæ, and Gaviæ.

The following is a description of the photographs which I have prepared in studying this structure:—

Plate V. fig. 1 is a portion of the underside of a Pink-footed Goose primary, magnified six times. The lower

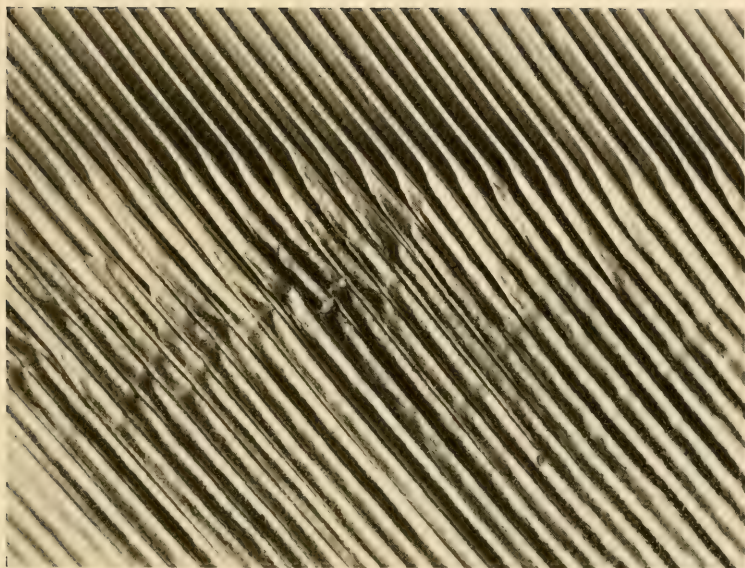


Fig. 1. Mag. 6.



Fig. 2. Mag. 55.

STRUCTURE OF FEATHERS.

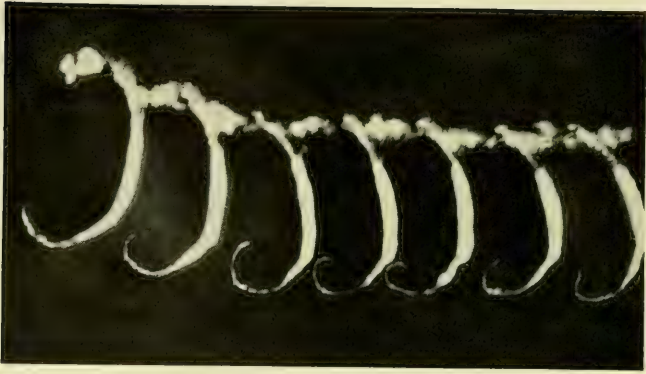


Fig. 1. Mag. 22.



Fig. 2. Mag. 22.



Fig. 3. Mag. 22.

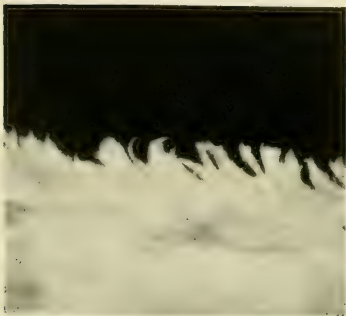


Fig. 4. Mag. 150.

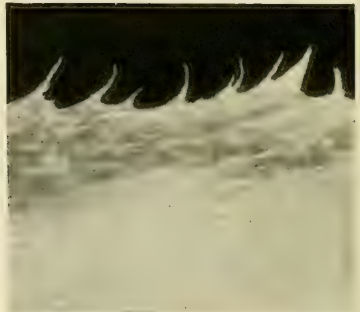


Fig. 5. Mag. 150.

STRUCTURE OF FEATHERS.

two-thirds of the illustration shows the tegmen covering the space between the barbs. The barbs in the upper one-third have open spaces between them with background of barbules.

Plate V. fig. 2 is a portion of a barb from a Goosander primary, magnified 55 times. This view shows the barb from the side, and it will be seen that the tegmen entirely covers the barbules on the left. Towards the right the tip of the tegmen has become detached from the barb, which is not usual.

The tegmen appears in two forms, (1) a flat cover, (2) a curved cover. There does not appear, however, to be any particular system about the construction, for while the Buzzard, Blackcock, Grey Partridge, Grouse, and Duck have a flat tegmen, the Turkey, Pheasant, Capercaillie, Goosander, Gull, and Owl have a curved tegmen.

Plate VI. fig. 1 is the sectional surface of seven barbs (in their original position) of a Turkey's primary, magnified 22 times. Here the impossibility of securing good definition over the whole had to be met with an average focus. The distal and proximal barbules are seen interlacing above and from them depend the seven barbs, each barb terminating in the curved form of tegmen which should close the space between the barbs, but in arranging the subject it was difficult to avoid disturbance.

Plate VI. fig. 2. The above explanation applies to this illustration, which represents a Pink-footed Goose's primary. The barbules extend along the upper surface and the tegmen appears as a flat cover on the lower side. In the original position the construction was that of a series of tubes, but in order to show the tegmen the barbs had to be slightly separated.

Plate VI. fig. 3 is a section similar to the above from a Heron's primary. The section was cut outside the semi-tegmenous area. This photograph was made to show an instance of "no tegmen." The barbules are seen above and the vertical pointed barbs below, showing the absence of tegmen at the tips.

It is curious that although the tegmen appears on the Pheasant, Blackcock, Grey Partridge, Capercaillie, Ptarmigan (summer and winter plumage), and Turkey, it is not found on the Domestic Fowl or Red-legged Partridge. The Partridge, Grouse, Blackcock, and Pheasant being so closely allied, it is remarkable that, as far as my investigations go, I should not have found the tegmen in the Red-legged Partridge. It is beyond the scope of these notes to go deeper into this subject, but it seems to me that the absence or presence of the tegmen may well prove to be a diagnostic character which so far has escaped the attention of systematic ornithologists.

The Red-legged Partridge has on the inner vane of the primary a narrow ventral ridge with a smooth edge, while towards the base of the outer vane the ventral ridge is larger and has a strongly fringed edge.

Plate VI. fig. 4, with magnification of 150 times, shows an example of this fringed edge.

The Grey Partridge has on the inner vane a tegmen with smooth edge, and on the outer vane a ventral ridge more or less fringed.

Plate VI. fig. 5, with magnification of 150 times, is given as a sample of this type of fringe.

The Grouse outer vane has a tegmen with a trace of fringe here and there. The Pheasant outer vane has a ventral ridge with rough edge and irregularly fringed. The Blackcock outer vane has a tegmen with light fringe commencing about half way from the base. The Capercaillie outer vane has a tegmen with rough edge, with very little trace of fringe.

The presence of tegmen is not restricted to the primaries, for I find it on the tail-feathers of the Grouse and Blackcock, while in the Capercaillie it is most marked. It does not appear on the tail-feathers of the Pheasant, Grey Partridge, or Red-legged Partridge.

Plate VII. fig. 1 was made to show the difference in structure between the barb and tegmen. The dark mottled portion is barb, and the lower and lighter portion



Fig. 1. Mag. 50.

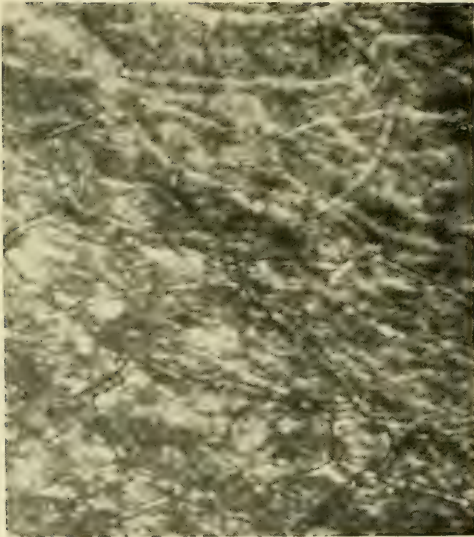


Fig. 2. Mag. 500.

STRUCTURE OF FEATHERS.

is tegmen. This subject was made from a barb cut from a Pink-footed Goose primary with magnification of 50 times.

Plate VII. fig. 2 is an attempt to show the superficial structure of the tegmen of a Pink-footed Goose. It was made with a magnification of 500 times.

At the commencement of these notes it was stated that I was engaged on the photographic analysis of a feather. These notes on the tegmen form a portion of the whole work, which it is hoped to publish before long in complete form.

XIV.—*The Birds of the Isle of May: A Migration Study.*

By EVELYN V. BAXTER and LEONORA JEFFREY RINTOUL.

INTRODUCTION.

THE Isle of May has long been known as a very favourable station for the observation of bird migration. It stands at the entrance of the Firth of Forth, and is separated from the land by a distance of five miles on the north and ten on the south. It is about a mile long and half a mile wide; the rocks on the west and south-west sides are very precipitous, rising to a maximum height of 180 feet above the sea; they are intersected by caves, are basaltic in formation, and of a crumbling consistency, making any attempt at cliff-climbing dangerous. On the north and east the land slopes gradually down to the water's edge, broken by inlets on the eastern side. Parts of the island were formerly cultivated, but now the greater portion is covered with rough grass interspersed with rocks: here and there, patches of thistles, nettles, and hemlock occur, and these, together with the gardens of the lightkeepers, form the only covert available for the birds which visit the island. On the west of the island the cliffs are broken by a ravine, the precipitous sides of which rise to a height of 100 feet, and in which lies a partly artificial lake; small pools are found in the shallow depressions on the grass-grown plateaux and rock-pools close to sea-level.

In old days the Isle of May was a famous place of pilgrimage : St. Adrian and his companions abode on the island in the ninth century, and the saint was slain there by the Danes about 872 A.D. Before the middle of the twelfth century David I. founded a monastery on the island and granted it to the Benedictine Abbey of Reading, on condition that it would maintain therein nine priests of their brethren, to celebrate divine service for the souls of the donor, his predecessors and successors, the Kings of Scotland. In the thirteenth century the Priory of May was sold to the Bishop of St. Andrews, and it remained under the spiritual lordship of the Priory of St. Andrews until 1606, when the lands were erected into a temporal lordship. There are many reminders of the ecclesiastical foundation : a small building on the eastern side is said to be the remains of the chapel, while the names borne by different parts of the island, such as Pilgrim Haven, Altarstanes, Holyman's Road, and others, form a link with the pilgrims of old. The island was purchased early last century by the Commissioners of Northern Lights, to whom it now belongs.

The lighthouse stands on the highest part of the island, on the western side, 240 feet above the sea : it is an electric light, and said to be 3,000,000 candle-power. Close by, on the other side of a hollow, is the old lighthouse, a square, stone, white-washed tower 40 feet high, built in 1636 by Alexander Cunningham of Barnes – the first lighthouse to be erected in Scotland. On the east side of the island, at a considerably lower altitude, stands a third lighthouse, formerly used to indicate the position of the North Carr Rocks, but now no longer in use. During our visits to the island, the only inhabitants were the lightkeepers, to whom we were indebted for many kindnesses and much assistance in our ornithological work.

It is a fortunate circumstance that the lightkeepers stationed on the Isle of May have been so often interested in observing and recording the birds which occurred there. Mr. Joseph Agnew made an excellent series of notes, from 1879 to 1886, for the British Association Reports on the

Migration of Birds. Mr. T. E. Arthur contributed good notes from 1898 to 1903 for the Report on the Movements and Occurrences of Birds in Scotland. Mr. J. McCuish from 1907 to 1909 sent notes to the Report on Scottish Ornithology, while Mr. S. Baigrie has kept a splendid series of records from 1911 onwards. Dr. Harvie Brown spent three weeks on the island in the autumn of 1884; Mr. William Evans has paid frequent short visits there, and has kindly given us the benefit of his observations; while we ourselves spent a month or six weeks there in the autumns of 1907-13 and a fortnight to a month in the springs of 1911-14, when the war put an end to ornithological expeditions.

We are very much indebted to the Commissioners of Northern Lights for so kindly giving us permission to visit the island, and we thank them very heartily for having enabled us to do so much work at this important station.

A good many of the old writers mention the birds of the Isle of May. Perhaps the most interesting of these accounts is the "Statistical Account of Scotland," published in 1792, in which it is stated that the Isle of May "is frequented by a great variety of sea-fowl, such as Kittiwakes, Scarts, Dunters, Gulls, Sea-pyets, Marrots, &c.;" while Sibbald, in his 'History of the Sheriff-doms of Fife and Kinross' (1710), says:—"Many fowls frequent the rocks of it, the names the people gave to them, are skarts, dunturs, gulls, scouts, kittiewakes; the last is so named from its cry, it is of the bigness of an ordinary pigeon, some hold it to be as savoury and as good meat as a partridge is. The scout is less than an ordinary duck and of its colour; the flesh of it is hard; it has eggs bigger than these of geese, the shells are of a green colour, with some black spots scattered here and there upon them."

Sir William Jardine in the second quarter of last century states that the following birds bred there:—Black Guillemot, Green-crested Cormorant, Sandwich, Roseate, Common, and Arctic Terns. Several species of birds which used to breed on the island now no longer do so; for instance, these four species of Terns and the Black Guillemot do not now nest

there, while the Peregrine, which formerly bred on the cliffs, now only visits the island in pursuit of prey. Writing in 1886, Dr. Harvie Brown includes in his list of breeding-birds the Song-Thrush, Wheatear (about 50 pairs), Linnet (a few pairs), Hedge-Sparrow (one pair in 1884 for the first time), and Cormorant, none of which now nests there. All that we have found breeding are the Starling, Pied Wagtail, Meadow-Pipit, Rock-Pipit, Blackbird, Eider, Shag, Oystercatcher, Redshank (one year only), Herring-Gull, Kittiwake, Razor-bill, Guillemot, and Puffin. It is difficult to find a reason for many of the changes which have taken place, the island affording many apparently suitable breeding-places.

MIGRATION ON THE ISLE OF MAY.

We have notes from the Isle of May of the arrival and departure of summer visitors, winter visitors, partial migrants, passage migrants, occasional visitors (viz. birds which visit us under certain weather conditions only, such as Yellow-browed Warblers and Little Buntings), and rare stragglers (that is, birds that have lost their way and of which only one or two occurrences have been recorded, as the Indian Stonechat and Pied Wheatear); also of weather movements and movements of cliff- and sea-birds. It must be remembered that on an island, owing to its limited size and lack of covert, a much larger proportion of the birds present can be seen and identified than is possible on the mainland. Also that it is much easier to ascertain when a bird arrives than on a larger space: for instance, if a Barred Warbler be beaten out of covert one morning, there can be but little doubt that it has arrived since the previous day; should a bird of the same species appear on the mainland, it is next to impossible, owing to the amount of covert, to say whether or no it had been there for some time previously.

Weather conditions have a great influence on the movements of birds: the main facts are not in dispute; but when we come to the more subtle effects of wind and weather, opinions differ as to the extent and direction of their influences. We find on the Isle of May that the weather in

which rushes of birds come to the island, and uncommon visitors appear, is during easterly or south-easterly winds, usually with cloud, haze, fog, or rain. An extensive anti-cyclonic area, with light east to south wind and fair weather, brings numbers of birds, and is by far the most satisfactory from our point of view, because working is agreeable and one can be sure of determining a much larger proportion of the arrivals than is the case in bad weather. A falling barometer, with strong east winds and heavy rain, does not, however, stop the birds; we have seen large numbers arrive under such conditions, when wind and rain made working very difficult. In northerly and westerly winds comparatively few birds are seen, and these are almost entirely our own summer or winter visitors; the enormous rushes of passage migrants do not occur and uncommon visitors are few and far between. At the same time, we are not sure that this is not the weather most favourable for the birds, although not for the observer. The direction of the wind does not prevent birds migrating—they move when the wind is at every point of the compass,—but although this is so, in our opinion the direction of the wind has a great influence on the route followed and therefore on the species which occur on our shores. From evidence gathered on the Isle of May and from data which we have studied, extending over a long period of years, in this country and elsewhere, we are convinced that alternative routes are followed, according to wind influences, though it is difficult to say whether drift is wholly responsible for the deviation from the direct route or whether this is to some extent undertaken voluntarily. For instance, in the case of birds going from their summer home in northern Europe to their winter quarters in northern Africa, if an easterly type of weather prevail *during their migration period*, we find that they strike our east coasts in enormous numbers, and many species are seen which do not visit us under any other weather conditions. On the other hand, should the prevailing type be westerly, these migrants do not strike the British Isles at all, and we believe that they proceed to their winter quarters along a more easterly

route. This question of alternative routes is a difficult matter to prove beyond a doubt, but there is a good deal of evidence which seems to us strongly in support of our theory. This we will detail as briefly as possible, dealing with autumn movements for the sake of convenience, though it must be understood that the same remarks apply to the spring migrations.

Firstly. There is the fact that, should a westerly type of weather prevail during the whole migration-period of any given species, such as Bluethroats, Barred and Yellow-browed Warblers, Scarlet Grosbeaks, Northern and Siberian Chiffchaffs, and many others, these birds will not be seen at our migration-stations. Should, however, the wind change to an opposite direction during the period of their migration, these species will at once make their appearance on our shores, travelling, no doubt, along that "bridge of fine weather" which Dr. Eagle Clarke, in his "Studies of Bird Migration," has shown to exist between the Continent and Great Britain under these meteorological conditions. Should the easterly type of weather not extend far enough to the east of our islands, the Asiatic species will not appear, although we may be visited by birds from northern and central Europe. In the autumn of 1912, late in September, we had easterly and south-easterly winds and a large rush of birds, including Little Buntings, Red-breasted Flycatchers, and Barred Warblers; in view of our former experiences we expected Yellow-browed Warblers, but none came under observation. On studying the meteorological conditions we found that, previous to and during that time, the weather conditions favourable for bringing this species to our shores did not extend sufficiently far east to influence its movements.

Secondly. If the easterly type of weather comes late in the season, an entirely different class of birds to those we get earlier in the year comes with it, thus proving, in our opinion, that the birds do not wait for this type of weather to perform their migration journey, but proceed to their winter quarters

by another route should westerly winds prevail during their normal migration-period.

Thirdly. Species which breed in the far north of both hemispheres, such as Lapland Buntings and Shore-Larks, appear in both easterly and westerly winds.

Fourthly. Observations made on the flight of Homing Pigeons also go to prove this point: for instance, a pigeon-fancier in Kirkcaldy (Fife) told us that when Pigeons were flown from North Berwick to Kirkcaldy, the route taken by the birds varied according to the wind which was blowing at the time. On a perfectly calm day, he had ascertained from observation that the Pigeons flew straight from one spot to the other. If the wind were westerly the birds crossed pretty straight over the Firth to the side opposite North Berwick, and then approached Kirkcaldy from the east along the north side of the estuary. If, on the other hand, the wind were easterly, the Pigeons hugged the south side of the Firth and crossed over much farther up, sometimes as high as Aberdour, thus actually approaching Kirkcaldy from the west side. The distance from North Berwick to Kirkcaldy is infinitesimal compared with that traversed by birds during their migration-flights, and if the divergence caused by the varying winds be so great in so small a distance, it is a fair assumption that on a flight of hundreds of miles it will assume very considerable proportions indeed. We have had corroborative evidence from others who fly Homing Pigeons.

Fifthly. If easterly winds continue over a considerable period birds keep coming in, but the migrants tend to remain on the island and do not pass on until the wind changes to the west, when the island is swept bare almost in a single night. This appears to us to show that the easterly wind is not favourable to the birds' southern journey, but has drifted them across the North Sea, many miles out of their direct route, which they will find it difficult to regain until the wind changes.

Sixthly. In westerly winds rushes of birds visit the Liuchiu Islands, off the east coast of Asia.

Seventhly. In an interesting article in 'Nature,' 26 July, 1917, by W. H. Dines, he shows the effect of wind on the drift of an aeroplane. He states: "The pilot, therefore, if the earth is hidden from him by a sheet of clouds, is absolutely and entirely ignorant of the strength and direction of the wind in which he is flying; it is just the same to him if it be a dead calm or if it be blowing at the rate of a hundred miles an hour from the east or from the west; he is, indeed, as unconscious of the motion which he is sharing with the air as he is of his daily revolution at a rate in these latitudes of some 600 miles an hour round the axis of the earth. But the effect upon the drift of his machine may be very considerable, and as he does not know what it is he cannot allow for it. . . . Thus Glasgow lies very close to a point 400 miles due north of Plymouth, and an aeroplane leaving Plymouth and flying due north at 80 miles an hour would find herself close to Glasgow in five hours' time. Should, however, a strong west wind be blowing of which the pilot did not know, and also clouds so that he could not see the earth, he would, if steering by compass, find himself in five hours' time over the North Sea, and quite possibly much nearer to the Danish than to the English coast. In the present state of our knowledge he could obtain information at starting of the general direction and strength of the wind, but not in such detail that he could hit off Glasgow within 100 or 200 miles." Easterly winds with low clouds, haze or fog is exactly the type of weather in which big rushes of birds occur on our coasts, and we think it a fair deduction that they, like the aeroplane pilot, have been drifted from their direct route.

Eighthly. In an autumn such as this (1917), in which persistent westerly winds prevail, not only do the large movements of passage migrants through Scotland not occur, but the numbers of winter visitors are enormously below the average, Fieldfares, Redwings, Bramblings, &c., being conspicuous by their absence. Dr. Eagle Clarke kindly informs us that in 1887, when similar weather conditions prevailed, winter visitors were equally scarce.

In view of the above evidence, we hold that there are strong grounds for believing that the route followed by birds on migration depends largely on the direction of the wind. It would appear that a bird's *most* fixed point is its breeding-place, and that its migration routes, and even its winter quarters, greatly depend on weather conditions during its periods of movement. We wish to reiterate that we do not consider that the *direction* of the wind, apart from its *force*, stops birds migrating, but merely determines the route taken on their long journeys. We believe that the deviation from the direct route is largely, perhaps mainly, due to drift, though voluntary "tacking" may be a factor. It seems impossible that it can be any advantage to a European or Asiatic bird breeding far north to make its journey southwards to its winter quarters hundreds of miles longer by proceeding via the British Isles, as many of them do under easterly weather conditions. We must remember that the best "migration-weather" for observers is probably the worst for the birds, and when ideal conditions prevail for them we see little or nothing of their migration-flights.

On their migration journeys birds run the gauntlet of many perils; foremost among these are adverse weather conditions. We have found Fieldfares and Blackbirds washed up by the sea, having evidently become exhausted by the struggle against wind and weather, and having fallen into the water and been drowned. We have also often seen birds alight on the May in a thoroughly exhausted condition, too tired even to flutter a few yards farther, and after such an arrival as this, we have picked up next morning many corpses of migrants, evidently killed by exhaustion, probably aided by starvation. This last is another peril which besets the path of birds on migration. In the autumn of 1913 this was brought home to us very forcibly. There were a great many birds on the island, and of these many Redwings, Thrushes, and Goldcrests literally starved before our eyes. Day after day we saw them getting weaker and weaker, till at last we picked up many dead. We felt sure that starvation was the cause of death but, wishing to have

our diagnosis confirmed, we sent some to Professor Sutherland of University College, Dundee, who kindly examined them for us and told us that our impression was correct. There had been a long drought, the island was parched and the grass dried up; this probably caused a shortage of their usual food supply, which on the Isle of May appears largely to be a small beetle found among the grass.

We now come to the depredations of the birds of prey. Merlins, Kestrels, and Short-eared Owls come with the flocks and harry them. Peregrines, too, slay many of the migrants—we have seen them hunting or eating all sizes of birds, from a Wood-Pigeon to a Goldcrest. We have seen Short-eared Owls chasing the birds that were circling in the rays of the lantern: that their hunts were all too successful was proved by the discovery of small heaps of dead birds in tufts of grass on the north plateau, where these Owls were living. Often these birds were minus the primaries of one or both wings, and sometimes the rectrices had been plucked out too. Thrushes seemed to be their chief fare, but we also found the remains of Redwings, Chaffinches, Spotted Flycatchers, Meadow-Pipits, Skylarks, Wheatears, a Bunting (probably a Reed), Goldcrests, a Turnstone, and Common Terns. There seemed to be regular larders, where the birds were kept till the Owls were ready to eat them.

Under certain weather conditions the lantern is a very great danger; given a night of fine rain or haze, preferably with a south-east wind, the light proves a fatal attraction and hundreds of birds are lured to their doom. We have stood on the balcony and watched the birds dash themselves at great speed against the glass and fall dead at our feet, often with the whole of one side cut as cleanly open as if it had been done with a knife. After a "lantern night" many disabled birds might be seen on the island next day, but what struck us most about these was the wonderful way in which they recovered from their injuries. One Wheatear, in particular, interested us greatly: it had a very badly smashed wing and we were doubtful of its recovery, but day

by day it improved till it was able to take short flights; these gradually became longer till one day it had left us and, we will hope, arrived safely at its winter quarters.

We were surprised to find how many of the migrants, in spring, sang while resting on the island. We have heard many Willow-Warblers, Sedge-Warblers, Whitethroats, Skylarks, Whinchats, Wheatears, and Greater Wheatears, singing vigorously. A fine male Reed-Bunting woke us one morning by singing just outside our window, and early on the 9th of May, 1911, we heard the unmistakable song of the Nightingale, while the dissyllabic note of the Cuckoo is often heard all over the island. The number of birds attracted to the lantern in spring is usually very much less than that of the autumn movements, but the charm of these spring rushes is greatly enhanced by the fact that the birds often come fluttering up the rays of light singing as they come. One May morning we stood on the balcony of the lighthouse from midnight to 3 A.M. watching a big rush of Willow-Warblers, Whinchats, Wheatears, and other migrants. There was a light south-east wind and small rain, and though many birds were attracted by the light they did not dash themselves against the glass, but merely fluttered singing up to the lantern and remained gazing in, fascinated by its powerful rays. After an arrival of migrants in spring, quite a large number of Warblers might be heard in song at the same time, answering each other from the walls round the fields, from the fences and bushes in the gardens, from thistle top and hemlock spray.

We have no intention of attempting to describe a rush, for the all-sufficient reason that it is indescribable; there are, however, certain differences between spring and autumn rushes which we would like to mention. In spring the birds seem more hurried than in autumn, not lingering on the island but hastening on, urged apparently by a stronger impulse than that which impels them in autumn. The magnitude of the autumn rushes, in our experience, exceeds that of those in spring, and the period of the spring passage

of most species tends to be shorter than that in autumn. There are, too, certain species of birds which very rarely, or never occur in spring but which are not very uncommon in autumn. The brilliancy of plumage of birds in spring makes identification much easier, and their less skulking habits at that season, as well as the smaller amount of covert on the island, tend to reduce the number which escape notice.

We have examined many birds killed at the lantern, both in spring and autumn, and have never found any food in their crops or stomachs, though occasionally one or two particles of grit were present.

The following is a list of all the birds known to have occurred on the island, with their status there; they number 178. We have added our field-notes, and it must be understood that these are made from our own observations on the island and refer to the birds' behaviour there. One asterisk before the name of the bird indicates that it was new to the Forth list, two that it was new to Scotland, and three that it had not before been recorded for Britain.

LIST OF SPECIES.

Corvus corone corone. THE CARRION-CROW. Occurs on passage in both spring and autumn, more commonly at the former season. In spring it has been recorded throughout March and April and up to 18 May, and in autumn from 26 September to 16 November. An occasional straggler appears in winter.

Corvus cornix cornix. THE HOODED CROW. A bird of double passage, more common in autumn than in spring; considerable numbers sometimes appear in easterly winds. In spring, passage takes place in March and April and occasionally, in small numbers, throughout May, while single birds have been recorded on 2 & 9 June and 5 July. In autumn, passage begins in the end of September and continues till mid-November; single birds sometimes visit the island in winter, and a number appeared there on 6 January, 1917.

Corvus monedula monedula. THE JACKDAW. Occurs irregularly in spring and autumn, occasionally in some numbers at the former season.

Corvus frugilegus frugilegus. THE ROOK. An irregular visitor in spring and autumn; most common in spring, occasionally occurring in large numbers in March.

Sturnus vulgaris vulgaris. THE STARLING. Breeds on the island in some numbers. Also a bird of double passage; in spring the regular movements take place from mid-February to mid-April, but we have seen numbers on passage as late as 14 May. The earlier birds are probably Scottish breeding-birds returning to their nesting-quarters; the later, passage migrants along our shores. Enormous numbers visit the island in autumn; small arrivals take place during the second half of September, but October and the first half of November are the times of maximum movement. It is difficult definitely to separate the departures of our own birds from the movements of Starlings from overseas, but it is safe to say that the large majority of these October and November migrants consists of birds from the continent of Europe. A few spend the winter on the island. Starlings are strongly attracted by light; we have seen them sitting thickly crowded on the hand-rail, on the balcony, and on the edge of the dome; at such times several usually manage to find their way into the light-room. They can strike the lantern harder than any bird we know without killing themselves, being very different in this respect from the Sky-Lark, which pays heavy toll on every migration night.

Oriolus oriolus oriolus. THE GOLDEN ORIOLE. The only record for the island is of one seen on 13 September, 1913, in strong north-east wind and heavy rain.

Chloris chloris chloris. THE GREENFINCH. Occurs on passage during April and up to mid-May. On 6 May, 1912, we watched small flocks passing over the island all day up to 3 P.M.; they came from the south-east and went

over to the north-west. They flew quite low, with the steady yet fluttering flight so characteristic of small birds on a long journey. Autumn passage takes place chiefly in October and November, though Greenfinches are occasionally seen as early as September, but no large flocks are ever recorded. This species frequently visits the island in winter, always in small numbers.

Spinus spinus. THE SISKIN. The spring records for the Isle of May are: three on 25 March, 1909, a male on 13 May, 1911, and another on 13 May, 1913. Large flocks frequently occur in autumn; passage at this season takes place between 22 September and mid-November. The only winter record is of a flock of about half-a-dozen on 1 January, 1883.

Passer domesticus domesticus. THE HOUSE-SPARROW. Between 1881 and 1885 there are scattered records of from one to a few House-Sparrows on the island in February, March, May, November, and December. The first autumn we were there (1907) we saw a few throughout our stay, and Mr. Ross, then chief engineer on the island, told us that they had bred that year—the first time to his knowledge. After this they seem to have vanished from the island, our only other record being of a male, found dead on 23 May, 1911; it had been dead for a considerable time.

Passer montanus montanus. THE TREE-SPARROW. Resident, several pairs breeding on the island. Also a passage migrant, much less numerous in spring (April–May) than in autumn (October and first week of November). The immigrants we have seen were always in much finer plumage than the local birds.

Fringilla cœlebs cœlebs. THE CHAFFINCH. A bird of double passage, very large flocks occurring in autumn, lesser numbers in spring; both sexes are represented.

Fringilla montifringilla. THE BRAMBLING. Passage migrant and occasional winter visitor. Spring passage

takes place chiefly in April, though one or two birds are recorded from 19 March to 18 May. In autumn very large flocks visit the island: the earliest noted is on 17 September, the latest 17 November, but October is the month in which the main arrivals take place. We have often seen day-time movements of this species: on 10 October, 1909 (south wind, light) flock after flock came in from the north-east all morning, till by midday there were numbers on every part of the island; by afternoon the flocks were enormous—there must have been thousands present. On 7 October, 1910, a good many Bramblings arrived from the east during the day (W., light, haze), and we heard and saw many other flocks flying over us, going west.

Acanthis cannabina cannabina. THE LINNET. Formerly a few pairs bred on the island; now, however, it only occurs on passage in small numbers. One appeared on 11 March, 1908, and there are a few scattered records in May, while in autumn small numbers are reported between 19 September and 8 November.

Acanthis linaria linaria. THE MEALY REDPOLL. An irregular passage migrant and winter visitor. It has been recorded in spring in small numbers between 12 March and 20 May, and in autumn (sometimes very plentifully) between 21 September and 12 November; large immigrations occurred in the autumns of 1910 and 1913. Under the date 8 February, 1886, Mr. Agnew writes: "For some weeks the island has been visited by a considerable number of Redpolls, and numbers of them died, I suppose from the extreme cold."

**Acanthis linaria holboelli*. HOLBÖLL'S REDPOLL. A bird of this subspecies was procured on 23 October, 1910, and sent to us.

**Pyrrhula pyrrhula pyrrhula*. THE NORTHERN BULLFINCH. The Isle of May participated in the large immigration of Northern Bullfinches which took place in Scotland in the autumn of 1910; several visited the island in the latter half

of October, both sexes being present. A Bullfinch reported by Mr. Agnew on 12 April, 1881, in light south-easterly winds *may* have belonged to this race.

**Carpodacus erythrinus erythrinus*. THE SCARLET GROSBEEK. Single birds, always in the greeny plumage (*i. e.*, females or young males), occurred on 25 September 1907, 12 September 1908, 13 September 1909, 7 September 1910, 8 and 20 September 1913. They chiefly frequented the potato patches in the gardens, and uttered a curious soft dissyllabic note; on one occasion we saw one eat a moth. The Grosbeak procured in 1907 was the second record for Scotland.

Emberiza calandra calandra. THE CORN-BUNTING. We have only once seen this bird on the island, *viz.* on 30 May, 1912, but Mr. Agnew records it in January, February, March, April, June, October, and December, and Mr. Baigrie in April, 1913. Never more than two birds have been seen at the same time, and the visits have been paid at long intervals.

Emberiza citrinella citrinella. THE YELLOW BUNTING. This species never occurs in any numbers on the island. It is a passage migrant in very small numbers and an occasional winter visitor. The spring movement is most pronounced in April, the autumn in October and the first half of November.

**Emberiza hortulana*. THE ORTOLAN BUNTING. An occasional visitor to the May. The records are: one shot 2 May 1885, several seen next day and two on 28 May 1885, one 20 September 1910, and three on 16 October of the same year. They frequented little patches of oat-stubbles in the gardens and were very wild.

**Emberiza pusilla*. THE LITTLE BUNTING. An occasional visitor in autumn under suitable weather conditions. The records are: one on 25 & 26 September 1909, three on 28 and one on 29 September 1912, and one on 8 October

1913—all with easterly and south-easterly winds. They are confiding little birds; we heard them utter a soft single note and also a gentle twittering song.

Emberiza schœniclus schœniclus. THE REED-BUNTING. A bird of double passage, occurring regularly in May and again from 24 September to mid-October.

**Calcarius lapponicus lapponicus*. THE LAPLAND BUNTING. An occasional visitor in autumn. The records are: single birds on 1 October 1907 (S.E., light to fresh, fog), 28 September 1911 (W., strong), 12 October 1911 (E.), and 24 September 1913 (S.S.E., light). The direction of the wind is interesting and suggestive if we consider the range of the species. This Bunting has a loud and peculiar note, which it usually utters when flushed.

Plectrophenax nivalis. THE SNOW-BUNTING. A common passage migrant and winter visitor. The period of movement in spring is March and the first half of April, in autumn the second half of September, October and November, the last month being the time the Snow-Bunting appears in the largest numbers. Comparatively few strike the lantern.

Alauda arvensis arvensis. THE SKY-LARK. It is impossible from data collected at one station only, to disentangle satisfactorily the very complicated movements of this species. It does not breed on the island, but is certainly a bird of double passage there and a common winter visitor under stress of weather on the mainland. It is recorded steadily on migration from February to May; the earlier dates probably refer to the return of our breeding-birds, the later to winter visitors and passage migrants going overseas to their continental breeding-grounds. In autumn, movement occurs continuously from mid-September to mid-November. It would seem probable that the earlier are our home-bred birds leaving, the later the arrival of winter visitors and passage migrants. Sky-Larks are peculiarly susceptible to light and visit the lantern in large numbers, many being killed.

**Lullula arborea arborea*. THE WOOD-LARK. An occasional visitor to the island. The records are: one on 16 & 17 October 1910, and one on 29 September 1912, both with south-easterly winds

Otocorys alpestris alpestris. THE SHORE-LARK. An occasional visitor in autumn. One was killed at the lantern on 11 October, 1907 (S.E., very light) and sent to us, two were seen on 13 October, 1909, and one on 14 & 16 (S.W. & W., fresh to strong) and four on 9 October, 1913 (E. & N.E., moderate). It will be noticed that this species has occurred in both types of weather, it, like the Lapland Bunting, having a circumpolar distribution. Shore-Larks have a sweet wild note, "hi-yi-yi," which they utter constantly when flushed; we often watched them settle half-way up a rock, run to the top, elevate their "horns," stretch their necks, and look around them.

Motacilla alba alba. THE WHITE WAGTAIL. A bird of double passage, having been recorded in spring between 23 April and 29 May and in autumn between 11 August and 2 October, always in small numbers. It has several times been taken at the lantern.

Motacilla alba lugubris. THE PIED WAGTAIL. A summer visitor to the island, where three or four pairs nest; the breeding-birds arrive at the end of February or early in March, leaving again early in October. It is also a bird of double passage, movement of this description being noted in April and September. There is only one winter record, a Pied Wagtail being on the island from 24 December, 1885, to 12 January, 1886.

Motacilla cinerea cinerea (= *M. boarula* auct.). THE GREY WAGTAIL. There are only two spring records, viz., on 25 March, 1909, and 28 May, 1911, and several in autumn between 8 September and 2 October.

Motacilla raii. THE YELLOW WAGTAIL. The only definite records of Yellow Wagtails are single birds on 17 May, 1911,

when a beautiful male was seen in Holyman's Road, 10, 13, & 14 May, 1913, 28 September, 1915, and 11 & 19 May, 1917.

Motacilla flava flava. THE BLUE-HEADED WAGTAIL. The only record for the island is of one seen by us on 13 & 14 May, 1913. It came with a large rush of birds and frequented a pool on one of the plateaux.

**Motacilla flava thunbergi*. THE GREY-HEADED WAGTAIL. An uncommon visitor to the island. Single birds occurred on 16 May, 1913, and 20 May, 1914. When on the wing this bird frequently uttered its loud and distinctive note.

Anthus trivialis trivialis. THE TREE-PIPIT. A bird of double passage, recorded in spring throughout May and in autumn in September and the first half of October.

Anthus pratensis. THE MEADOW-PIPIT. A summer visitor, some pairs breeding on the island; these appear to arrive in March and to leave again in August and September. Large passage movements also take place; these continue through April and the first half of May, and occasionally even up to the end of the month. In autumn, passage is in progress in September and October, and there are two records of the species in November.

Anthus petrosus petrosus. THE ROCK-PIPIT. Resident, a good many breeding on the island, while some stay throughout the winter. Passage in spring and autumn also takes place; at the former season in May, at the latter during the second half of September and the first week of October. Although we were on the look-out for the Scandinavian form *A. p. littoralis* among these migrants, we never succeeded in distinguishing it.

Regulus regulus regulus. THE GOLDCREST. A bird of double passage, occurring in much larger numbers in autumn than in spring. It has occurred fairly frequently in March, but April is the time of maximum passage, and

there are but few records for May. Continuous movement takes place in autumn from early September to the end of October and sometimes into November: to begin with, the numbers are small, and these are doubtless our own birds leaving us; later, with easterly and south-easterly winds, enormous rushes of continental immigrants take place. On these occasions the numbers are indescribable, and Goldcrests are to be seen everywhere—among the rocks, on the cliff-faces, all over the plateaux, in the gardens, and on the buildings. They are quite fearless, far the tamest of any of the migrants; we have frequently picked them up when they were creeping about over the rocks or among the nettles. They are strongly attracted by light, and many fall victims to its fatal fascination. There is but one winter record for the island—*i. e.*, a Goldcrest at the lantern on the morning of 18 December, 1913.

****Parus major major.** THE CONTINENTAL GREAT TITMOUSE. A bird of this race occurred on 15 October, 1910.

Parus ater britannicus. THE BRITISH COLE TITMOUSE. The only record for the island is of one which appeared on 1 October, 1908, in one of the gardens.

Parus cæruleus obscurus. THE BRITISH BLUE TITMOUSE. One arrived on 30 September, 1908. A Blue Titmouse (subsp. ?) is recorded on 9 October, 1884.

Ægithalus caudatus roseus. THE BRITISH LONG-TAILED TITMOUSE. A party of six frequented the rocks at the south end of the island on 26 & 27 October, 1913.

Lanius excubitor excubitor. THE GREAT GREY SHRIKE. Occasionally visits the island; single birds are recorded on 16 October 1882, 25 October 1908, and 1 November 1914.

Lanius collurio collurio. THE RED-BACKED SHRIKE. This Shrike occurs not infrequently in May, in ones or twos. A Shrike which was procured on 27 September, 1907, and

pronounced by Dr. Hartert to be an abnormally coloured young bird of this species, differs so widely from the ordinary plumage, that, in spite of the high authority on which it is named, we are still doubtful of its specific identity. In this singular specimen the head and mantle are plain dark greyish brown; the lower back, scapulars, and upper tail-coverts a little paler and with dark vermiculations; the tail, which is decidedly long (3.25 inches), is crossed at an inch from its tip by a bar of reddish brown. The under surface is plain white, with a few dark bars on the sides of the fore-neck and breast and on the flanks.

*****Lanius senator senator.*** THE WOODCHAT SHRIKE. A Woodchat Shrike was killed at the lantern at 2 A.M. on 19 October, 1911; it was a young bird, mainly in the plumage described by Dr. Hartert as the "nest-kleid."

Sylvia communis communis. THE WHITETHROAT. A bird of double passage, occurring in spring from the latter end of April, throughout May, and occasionally in early June; the latter birds being probably passage migrants on their way to breed overseas. In autumn, passage usually begins about mid-August, though a few Whitethroats were on the island on 27 July, 1885: these early records probably refer to the departure of our home-bred birds. The later movements, which take place in September and the first week of October, vary enormously in magnitude; some autumns great numbers visit the island, in other years only one or two are seen. These Whitethroats are probably continental bred birds, and the weather conditions prevailing during their migration periods decide whether or not they strike the British coasts during their southward journey. We have often noticed on the island that these birds took covert far down rabbit-holes or in crevices under rocks.

Sylvia curruca curruca. THE LESSER WHITETHROAT. A bird of double passage under suitable weather conditions, occurring in spring between 4 & 20 May and in autumn

between 27 August and 12 October. Lesser Whitethroats always occurred in small numbers and were very tame, often almost allowing us to touch them.

Sylvia simplex. THE GARDEN-WARBLER. A passage migrant in small numbers, being recorded in spring throughout May and in autumn between 12 September and 17 October, though early migrants reached the island on 5 August, 1909, and 11 August, 1910.

Sylvia atricapilla atricapilla. THE BLACKCAP. A passage migrant in small numbers, more plentiful in autumn than in spring. Spring passage has been noted between 3 & 26 May and autumn movement between 10 September and the end of October, while a male was killed at the lantern on 5 November, 1907, and a male and female on 15 November, 1911.

**Sylvia nisoria nisoria*. THE BARRED WARBLER. An occasional visitor in autumn. The records are: 24 September 1907, 13 September 1909, 10 September 1911, and 12, 13, & 28 September 1912—all single birds except 12 September 1912, when two appeared. The flight of this Warbler is heavy; it is very lethargic and fond of taking covert; its habits are skulking, and it will return again and again to the spot whence it is first flushed. What strikes one principally is the large size of its feet, which look disproportionately big when seen perching and even when flying. It must be understood that these, and the other notes on habits, refer only to birds on migration, and are our own personal observation.

Locustella naevia naevia. THE GRASSHOPPER-WARBLER. The only records are of single birds on 21 September 1908 and 14 May 1913.

Acrocephalus schœnobæus. THE SEDGE-WARBLER. A bird of double passage, occurring in spring between 29 April and 27 May and in autumn between 10 August and 1 October. It is rather strongly attracted by light.

****Hypolais polyglotta.** THE MELODIOUS WARBLER. A very rare visitor, the only record being of an adult female on 27 September, 1913.

Phylloscopus trochilus trochilus. THE WILLOW-WARBLER. A passage migrant in large numbers from 20 April throughout May and even, in 1914, on 10 & 11 June; probably the earlier are our Scottish breeding-birds arriving, while the later are on their way overseas. A considerable movement takes place in August, sometimes beginning as early as the 5th, these being probably departures of home-bred birds. This is supplemented throughout September by passage migration, which occasionally lasts even up to 18 October. This bird is strongly attracted by light.

****Phylloscopus trochilus eversmanni.** THE NORTHERN WILLOW - WARBLER. This long-winged race has been obtained twice—at the lantern on 10 May, 1909, and on 6 October, 1911. It doubtless occurs more commonly, but, being difficult to distinguish from the typical form, is overlooked.

Phylloscopus sibilatrix sibilatrix. THE WOOD-WARBLER. The only authenticated records for the island are on 3/4 May 1914, when one was killed at the lantern, 8 August 1915, and 26 August 1917.

Phylloscopus collybita collybita. THE CHIFFCHAFF. Occurs occasionally in spring and autumn. In spring the records are on 17 April 1909, 12 May 1913, and 8 May 1917; in autumn there is one record in August, two in September, and a good many in October. In the autumns of 1912 and 1913 a good many of this and the following subspecies appeared on the island; otherwise the records are but isolated ones.

***Phylloscopus collybita abietinus.** THE SCANDINAVIAN CHIFFCHAFF. There are several records of this race in the autumn of 1912 and 1913 and two in that of 1914; the dates range from 30 September to 3 November.

**Phylloscopus collybita tristis*. THE SIBERIAN CHIFFCHAFF. The only specimen recorded was procured on 16 October, 1910.

**Phylloscopus humei præmium* †. THE YELLOW-BROWED WARBLER. Given an easterly type of weather at its migration period, sufficiently wide-spread to extend to its Asiatic haunts, this little Warbler may be expected to visit our shores in autumn. We have seen it on the May in the autumns of 1907, 1908, 1909, & 1913, between 16 September and 24 October, sometimes two or three on the same day. Yellow-browed Warblers are very restless little birds, always on the move, flitting from place to place at lightning speed. They have a loud clear note—a ringing “pēē,” that may be heard at a considerable distance. It would be interesting to know whether the Yellow-browed Warblers that penetrate to this country ever regain their regular wintering place.

Turdus viscivorus viscivorus. THE MISSEL-THRUSH. Occurs in small numbers on double passage. In spring, movement is recorded in February, March, and April, with stragglers into May; the earlier of these probably refer to returns of our own breeding-birds, the later to migrants going overseas. Exceptionally early returns are noted in July and August, but the period of normal autumn migration is the latter half of September and October, and single birds were at the lantern on 16 November, 1900, and 12 November, 1913.

***Turdus musicus musicus*. THE CONTINENTAL SONG-THRUSH. An autumn passage migrant, and probably also occurring in spring. We have specimens of this bird taken in rushes at the end of September and in October, and no doubt the large immigrations that take place in late October and early November belong to the typical form. Large movements of Thrushes take place in February and March; Continental birds are probably present in these, but of this there is, as yet, no proof. On several occasions we have seen one to three Thrushes in May, these were always very wild and unapproachable, and the fugitive glimpses which we had of

† *Vide supra*, p. 238.

them did not enable us to determine the subspecies. We have seen enormous rushes of this bird in October; sometimes the island is covered with them, their characteristic note resounding on every side. In comparison with the British birds, which are often on the island at the same time, the Continental Thrush in the field looks darker and slighter, and is much less confiding.

Turdus musicus clarkii. THE BRITISH SONG-THRUSH. Thrushes, doubtless this subspecies, used to breed on the island, but now no longer do so. Passage migrant: some of the large numbers occurring in February and March are without doubt our Scottish birds returning to their breeding-places, and very large numbers of this race visit the island in autumn. The main autumn movement takes place in September and October, but early arrivals are noted in August, and those killed at the lantern during this month and sent to us have always been our home-bred birds. Thrushes (subsp.?) occasionally visit the island in winter. In the main, Thrushes travel by night, though daylight movement also takes place; we have seen flocks arrive on the island by day, plunging down from a great height, uttering a peculiar shrill note as they come, alighting on the island and immediately taking covert. When leaving for a long flight, they rise perpendicularly into the air, until invisible not only to the naked eye but also to field-glasses.

Turdus iliacus. THE REDWING. A bird of double passage, much commoner in autumn than in spring, and occasionally a winter visitor. The period of maximum movement in spring is March and April, though Redwings sometimes appear as early as February and as late as 25 May. In autumn arrivals occur between 20 September and mid-November. We have seen great daylight movements of this species, though Redwings usually travel by night; for instance, on 10 October, 1909, they were arriving from the north-east all day, and on 16 October, 1910, great numbers kept coming in from the north. All Thrushes are strongly attracted by the lantern; this species, Song-Thrushes, and Fieldfares are

sometimes killed in hundreds, and even when the light is not very attractive, the "zip zip" of the Thrush and the "zieh" of the Redwing may be heard on many a night as they fly round in the rays.

Turdus pilaris. THE FIELDFARE. A bird of double passage and a frequent visitor in winter; the regular migration begins in March, but April and May are the periods of maximum movement. There are two June records—on 2 June 1911, and 6 June 1915. Autumn migration has been noted as early as 25 September, but the main arrival takes place between mid-October and mid-November. Fieldfares also sometimes move by day; on 24 October, 1913, a pronounced movement of this kind took place and many Fieldfares passed, up till mid-day, making their way with some difficulty against a heavy west wind; occasionally they alighted on the island for a few moments, but soon went on. The flocks varied in size from nine to about thirty.

Turdus merula merula. THE BLACKBIRD. Resident, breeding freely on the island; also a bird of double passage—in spring in March and April, in autumn in October and the first half of November. From 14 to 17 October, 1910, a large immigration of Blackbirds took place; we saw many at the lantern and on the island, almost all being young males with black bills.

Turdus torquatus torquatus. THE RING-OUZEL. A bird of double passage, from mid-April to mid-May, and again throughout September and October, and even up to 22 November.

Phœnicurus phœnicurus phœnicurus. THE REDSTART. A bird of double passage, from mid-April throughout May and even into June; these later birds were doubtless passage migrants on their way overseas. Single birds are recorded on 29 June, 1882, and 13 July, 1914, but regular movement does not begin till the last week of August, and lasts till the

first week of October, though stragglers are recorded up to the end of the month. Redstarts sometimes visit the island in very large numbers.

Phœnicurus titys. THE BLACK REDSTART. A bird of this species was shot by Mr. Agnew on 24 October, 1884. Since then Black Redstarts have occurred on a good many occasions in April, May, October, and November. They occur in ones and twos, and those we have seen have always been very wild and unapproachable.

*******Erithacus rubecula rubecula*. THE CONTINENTAL REDBREAST. A bird of double passage; it has occurred at the end of April and in May, and from 24 September throughout October. We have never seen more than one or two in spring, but large numbers sometimes appear in autumn. Its habits are very different from those of the British Redbreast; we found it wild and skulking, taking covert in holes, under overhanging banks and among stones. The mortality among these migrants is very large; we have frequently picked them up dead after a big arrival, having apparently died of exhaustion or starvation, as they showed no signs of injury.

Erithacus rubecula melophilus. THE BRITISH REDBREAST. A bird of double passage; we have several records of it in May, up to the 20th, and it seems probable that some, at any rate, of the Redbreasts recorded in March and April belong to this subspecies. Small arrivals take place in August, these being probably *E. r. melophilus*, and this race occurs regularly in September. Occasionally Redbreasts visit the island in winter, but we have no proof as to whether they belong to this or the preceding subspecies.

*******Luscinia megarhyncha megarhyncha*. THE NIGHTINGALE. The only authenticated record for Scotland is of a male which arrived on the island on 9 May, 1911. It came with a light south-easterly wind, along with a rush of Warblers and other migrants.

Cyanosylvia suecica suecica. THE RED-SPOTTED BLUE-THROAT. Occurred in September, 1883, 1908, 1909, 1910, and 1913, and on 5 October, 1908, in which year a good many were present on the island. These birds were very wild when they first arrived, but became much tamer. The chestnut basal portion of the tail is a very striking feature in this bird; when about to alight Bluethroats fan out the tail, and this bright colour contrasts strongly with the dark brown terminal portion.

Saxicola rubicola rubicola. THE STONECHAT. Passage migrant in very small numbers; we have never seen more than one at a time, though we have seen them every autumn we have been on the island. In spring Stonechats have occurred in March, and in autumn between 11 September and 11 October.

**Saxicola rubicola indica*. THE INDIAN STONECHAT. The first Scottish and second British record of this bird was of a young male procured on 10 October, 1913.

Saxicola rubetra rubetra. THE WHINCHAT. A bird of double passage, occurring from 25 April throughout May, reappearing about mid-August, the migration extending throughout September and the first week of October. It appears at times in considerable numbers.

Œnanthe œnanthe œnanthe. THE WHEATEAR. Formerly bred on the island, but now no longer does so, which is curious, as there are many suitable nesting-places. A bird of double passage, passing in spring between 21 March and 10 June, and in autumn between 6 July and mid-October, while stragglers have been seen up to 1 November. Wheat-ears sometimes appear in very large numbers, and many visit the lantern.

**Œnanthe œnanthe leucorrhoa*. THE GREENLAND WHEATEAR. A bird of double passage, visiting the island in spring from 21 April to 31 May, and in autumn from 6 September to 24 October. In addition to its larger size and more vivid

colouring, this subspecies, in our opinion, differs from the typical form in its way of holding itself, and is more given to perching on elevated places, such as chimney-pots, roofs, and so on. We have frequently seen males displaying in spring; they crouched down, spread out and depressed their tails so that the white showed conspicuously, and uttered a peculiar sharp note, then lifted their wings stiffly and remained so for a moment. They also sang vigorously; their song seemed louder and wilder than that of the Common Wheatear.

****Enanthe leucomela leucomela*. THE PIED WHEATEAR. A female in autumn plumage was procured by us on the Isle of May on 19 October, 1909. The wind had been from the east the previous day, but had returned to the west that morning. This specimen belonged to the white-throated variety, the *Saxicola vittata* of Hemprich & Ehrenberg. It was considerably darker than the Common Wheatear, looked slighter, and seemed to show less white on the rump and tail when it flew. It was restless and rather wild, fluttering from one rock to another in a hurried manner.

Accentor modularis modularis. THE HEDGE-SPARROW. Formerly bred on the island, but now is only a bird of passage and occasional winter visitor. Passes in spring between 2 March and 15 May, and in autumn between mid-September and mid-November.

Cinclus cinclus britannicus. THE BRITISH DIPPER. A bird of this race was shot on the island on 22 April, 1885, and Dippers recorded on 2 & 29 August and 8 December, 1884, may also have belonged to this subspecies.

Troglodytes troglodytes troglodytes. THE WREN. A bird of double passage and occasional winter visitor, occurring in spring from mid-April to mid-May, and in autumn from mid-September to mid-November.

Muscicapa grisola grisola. THE SPOTTED FLYCATCHER. Occurs at both migration seasons: spring movement takes place from 7th to end of May, and there is one record on

12 June, and in autumn from mid-August throughout September and occasionally to 16 October.

Muscicapa atricapilla atricapilla. THE PIED FLYCATCHER. Occurs on both spring and autumn passage, at the former season from 27 April to 22 May, at the latter from 9 August throughout September, and occasionally up to mid-October. This bird is strongly attracted by light, much more so than the preceding species.

**Muscicapa parva parva*. THE RED-BREASTED FLYCATCHER. An uncommon visitor to the island: the records, all of single birds, are 25 September 1909, 28 September 1912, 1 October 1913, and 28 September 1916, all with easterly winds.

Hirundo rustica rustica. THE SWALLOW. A bird of double passage, occurring in spring from 18 April throughout May, and in autumn from mid-August to mid-October, and once on 4 November. Swallows migrate largely by day; we have seen them at both migration periods performing their daylight journeys.

Delichon urbica urbica. THE HOUSE-MARTIN. A bird of double passage; its spring movements are between 4th and end of May, its autumn chiefly in September. This and the preceding species are occasionally reported during summer, but these are probably birds over from the mainland.

Riparia riparia riparia. THE SAND-MARTIN. Passes in small numbers in spring and autumn; at the former season the only notes we have are between 2 & 29 May, at the latter between 18 July and 17 September.

Dryobates major major. THE NORTHERN GREAT SPOTTED WOODPECKER. On 16 September, 1909, a bird of the year visited the island. It fed on the ants in the grassy mounds, progressing with clumsy flight from one to the other.

Iynx torquilla torquilla. THE WRYNECK. An occasional visitor, single birds having been recorded in May, August, and September.

Cuculus canorus canorus. THE CUCKOO. A bird of double passage, occurring in spring from the end of April to early June, and in autumn from 10 July to 23 August, the later records being birds of the year.

Micropus apus apus. THE SWIFT. Passes in spring and autumn; at the former season from 3 May to early June, at the latter from the end of July to the beginning of September. Swifts migrate largely by day, but must also travel at night, as they are occasionally killed at the lantern.

Caprimulgus europæus europæus. THE NIGHTJAR. There are three records for the island, namely, on 22 September 1881, 2 June 1902, and 9 October 1913.

Upupa epops epops. THE HOOPOE. There are two records for the island, namely, on 30 April 1898, and 1-3 October 1910.

Alcedo ispida ispida. THE KINGFISHER. The only record for the island is of a bird killed at the lantern on 2/3 September 1914.

Asio otus otus. THE LONG-EARED OWL. An occasional visitor from September to November, and one was recorded on 26 July, 1915.

Asio accipitrinus accipitrinus. THE SHORT-EARED OWL. A bird of double passage: in March and April, and again from 24 September to early November. Quite a number visit the island some autumns.

Buteo buteo buteo. THE BUZZARD. On 22 October, 1913, we saw a bird of this species being chased by a Peregrine; they flew south over the island, the Falcon stooping at the Buzzard, which uttered wild mewing calls.

Falco peregrinus peregrinus. THE PEREGRINE. Used to breed on the cliffs, but now no longer does so. Frequently visits the island at all seasons.

Falco æsalon æsalon. THE MERLIN. Occurs regularly in September and October, and there are three spring records, one in March and two in May.

Falco tinnunculus tinnunculus. THE KESTREL. A passage migrant; in spring chiefly in April, though occasionally seen in March and May, and in autumn from August to November.

Phalacrocorax carbo carbo. THE CORMORANT. It is stated that a few pairs used to breed in a cave on the island, but Mr. Evans is of opinion that this species and the Shag have been confused. Cormorants, chiefly immature, frequent the island throughout the year.

Phalacrocorax graculus graculus. THE SHAG. A pair breed on the island, and Shags, mostly immature, may be seen there all the year round. In the evenings the Shags and Cormorants used to assemble on the west cliffs; there they soared in circles at varying heights, settling on the cliffs for a minute as they came round, and then flinging themselves off and circling again. These assemblies were larger and more animated when there was a strong west wind than at any other time, and we noticed that the flights were highest above the sea under these weather conditions, probably on account of the updraught off the cliffs.

Sula bassana. THE GANNET. Constantly seen passing, in some years as early as January and as late as November. Very occasionally one will settle on the island.

Anser albifrons albifrons. THE WHITE-FRONTED GOOSE. The only record for the island is of an immature bird on 27 October, 1913. "Grey Geese" are frequently recorded as passing in winter, but it is impossible to say to which species they belonged.

Branta bernicla bernicla. THE BRENT GOOSE. There are two records of this species in October.

Branta leucopsis. THE BARNACLE GOOSE. One is reported by Mr. McCuish as having been seen on the island on 31 March, 1908.

Tadorna tadorna. THE COMMON SHELDUCK. The only records are—two killed at the lantern on 22 September, 1898, and one seen off the North Ness on 4 May, 1913.

Anas boschas boschas. THE MALLARD. Seen frequently in the sea off the island.

Querquedula crecca crecca. THE TEAL. Fairly common in small numbers in September and October, and has also been recorded in January, March, April, and December.

Mareca penelope. THE WIGEON. Seen occasionally, chiefly in May, September, and October.

Spatula clypeata. THE SHOVELER. A male was sent us from off the island on 2 May, 1908.

Nyroca ferina. THE POCHARD. A female was seen on the loch by Mr. W. Evans on 4 August, 1911.

Nyroca fuligula. THE TUFTED DUCK. Five flew close overhead on 21 September, 1908.

Clangula hyemalis. THE LONG-TAILED DUCK. Seen fairly frequently about the island between October and April.

Somateria mollissima mollissima. THE EIDER. Breeds on the island, and may be seen in the seas around throughout the year. Its numbers are greatly increased in late September and October by arrivals, chiefly of full-plumaged males.

Edemia nigra nigra. THE COMMON SCOTER. Seen occasionally off the island in May, September, and October.

Edemia fusca fusca. THE VELVET SCOTER. Eight flew close past the island on 22 September, 1913.

Mergus serrator. THE RED-BREASTED MERGANSER. There are occasional records in July, September, October, and November.

Ardea cinerea. THE HERON. Occurs on the island at all seasons of the year.

Scolopax rusticola. THE WOODCOCK. A bird of double passage, more abundant in autumn than in spring, and an occasional winter visitor. In spring the movement is chiefly in March and April, with stragglers as late as 13 May, and in autumn from the end of September to mid-November, the period of maximum movement being the end of October and beginning of November.

Gallinago gallinago gallinago. THE SNIPE. A bird of double passage and occasional winter visitor. The periods of maximum movement are March, April, and up to 11 May and 3 September to mid-November. This species has never been seen on the island in any numbers.

Limnocryptes gallinula. THE JACK-SNIPE. A bird of double passage and fairly frequent winter visitor. Passage takes place in March and April, and from 22 September through October and November; it occurs in small numbers only.

Tringa canutus. THE KNOT. The records for the island are : 2 November 1900, two killed at the lantern ; 7 November 1902, six killed at the lantern ; 19/20 May 1912, " going north calling at night " ; 21 September 1912, from 12 to 3 A.M. two killed at the lantern, one caught, and many heard passing going due south. The bird that was caught was kept for us till the morning, when we ringed and released it ; it immediately flew away strongly on exactly the same line as that taken by the migrants the preceding night, passing rapidly out of sight calling as it flew.

Tringa maritima maritima. THE PURPLE SANDPIPER. A winter visitor to the island, arriving from 23 July to mid-August and leaving again in May, our latest date being 24 May.

Tringa alpina alpina. THE DUNLIN. Occurs in spring, apparently chiefly in May, and in autumn from mid-August to mid-October, always in small numbers.

Tringa ferruginea. THE CURLEW SANDPIPER. The only record is of one killed on 14 October, 1902.

Machetes pugnax. THE RUFF. The only specimen known on the island was procured on 5 May, 1885.

Totanus totanus. THE REDSHANK. A pair bred on the island in 1912. A winter visitor in small numbers and bird of double passage, movement being noted, at the lantern and elsewhere, from 23 March to 24 May and from 16 July to mid-October.

Totanus hypoleucus. THE COMMON SANDPIPER. A bird of double passage, occurring in very small numbers in May and August.

Limosa limosa limosa. THE BLACK-TAILED GODWIT. One was procured at the end of May 1902.

Limosa lapponica lapponica. THE BAR-TAILED GODWIT. The only record is of one seen by us flying just off the south end of the island on 24 September, 1910.

Numenius arquata arquata. THE CURLEW. Occurs on the island at all seasons of the year, but does not breed there. Decided passage-movement takes place in March and April, and again in August and September.

Numenius phaeopus phaeopus. THE WHIMBREL. A bird of double passage in very small numbers, being recorded in May and from the beginning of August up to 18 September.

Charadrius apricarius. THE GOLDEN PLOVER. A bird of double passage and an occasional winter visitor. Passage takes place chiefly in March and April, but overseas migrants have been observed as late as 23 May. In autumn this species is on the move from early September to early November.

Ægialitis hiaticula. THE RINGED PLOVER. An occasional visitor. Single birds are recorded on 15 & 16 May, 1914, and 14 July, 1910, and small numbers are noted on several occasions in August and September.

Eudromias morinellus. THE DOTTEREL. An occasional visitor. The species has been killed at the lantern and sent in, in May 1885 and August 1913 & 1914. In the last year Dotterel were unusually numerous, being at the lantern in numbers on 29/30 & 30/31 August and on the island during the daytime (S.E. & E. wind). It is interesting to note that this movement was also recorded at the Mull of Galloway lantern and at some of the Danish light-stations.

Vanellus vanellus. THE LAPWING. A bird of double passage and occasional winter visitor. The main spring movement takes place from mid-February to mid-April, but stragglers occur up to the end of May. In autumn small numbers are seen from August to November, but the migration is never as pronounced as it is in spring. Lapwings are often heard and seen in the rays of the lantern.

Hæmatopus ostralegus ostralegus. THE OYSTER-CATCHER. Two pairs breed on the island. There is little evidence of movement beyond a few notes of Oyster-catchers in the rays in February, May, and September.

Arenaria interpres interpres. THE TURNSTONE. Winter visitor, arriving about the third week of July and remaining up to the end of May.

Larus canus canus. THE COMMON GULL. Visits of this species to the island are recorded in May, September, and October.

Larus argentatus argentatus. THE HERRING-GULL. When we first went to the Isle of May in 1907 one pair of Herring-Gulls bred there, but they increased till in 1914 about a dozen pairs were nesting. Adults or young birds of this species frequent the May throughout the year.

Larus marinus. THE GREATER BLACK-BACKED GULL. Chiefly a winter visitor, but a few may be seen throughout the year.

Larus fuscus affinis. THE BRITISH LESSER BLACK-BACKED GULL. A bird of double passage, occurring chiefly in April and May and in September and October.

Larus glaucus glaucus. THE GLAUCOUS GULL. There are several records, chiefly of immature birds, in May and October.

Larus ridibundus. THE BLACK-HEADED GULL. There are frequent records of small numbers in March, May, September, and October.

Larus minutus. THE LITTLE GULL. The only record for the island is of an immature bird seen by us on 17 October, 1913.

Rissa tridactyla tridactyla. THE KITTIWAKE. A summer visitor to the island, breeding in numbers on the cliffs, which it first visits in March, leaving them again about mid-August. Flocks of Kittiwakes remain in the adjoining seas, where we used to see them till we left the island in late October. They are usually seen apparently feeding on shoals of fry along with Guillemots and Razorbills; when these latter come up from a dive the Kittiwakes stoop at them, frequently forcing them to dive again. There is a

record of a Kittiwake at the lantern on 14 November, 1884; otherwise we have no winter records.

Sterna hirundo. THE COMMON TERN. No Terns now breed on the island, but Common Terns are stated by Sir William Jardine to have bred there in former times. Common Terns are frequently seen passing or fishing off the island from May to September, and there are a good many records of Terns at the lantern or in the rays during the latter month.

Sterna paradisea. THE ARCTIC TERN. This bird is stated by Macgillivray to have been formerly common on the May, and by Sir William Jardine to have bred there; but the only recent records of its occurrence there are of some passing or sitting on the rocks on 23 September, 1907, and 9 September, 1910.

Sterna dougalli dougalli. THE ROSEATE TERN. This Tern is stated by Sir William Jardine to have formerly bred on the island.

Sterna minuta minuta. THE LITTLE TERN. The only records are of several seen by Mr. Evans flying round the light on 8 September, 1913, and one or two on 1 August, 1915.

Sterna sandvicensis sandvicensis. THE SANDWICH TERN. Frequently seen passing in May, September, and early October. Is stated to have formerly bred on the island.

Catharacta skua skua. THE GREAT SKUA. Single birds were seen just off the island on 6 October, 1908, 14 July and 3 October, 1910.

Stercorarius parasiticus. THE ARCTIC SKUA. We have frequently seen birds of this species chasing the Gulls and Terns in May, September, and October. Skuas are supposed not to dive, but we once saw one do so. It had hunted a young Kittiwake till the latter had dropped a fish that it

was carrying ; this fell into the sea about twenty to thirty yards from where we were sitting. The Skua alighted on the water near its booty, pecked at it once or twice in a half-hearted manner, and then took no notice of it for a minute, during which time it sank. The Skua looked here and there for it, then slightly opening its wings, dived right under the water very neatly, stayed under for a moment, and then reappeared, but without the fish.

Stercorarius pomarinus. THE POMATORHINE SKUA. The only record for the island is of one which appeared there on 18 September, 1911.

Alca torda. THE RAZORBILL. A good many breed on the cliffs, to which they pay periodic visits from early February until they finally settle down in the end of April. They leave the cliffs again about mid-August, but remain in the surrounding seas throughout the winter. In October southward movements of this species are much in evidence to the east of the island.

Uria troille troille. THE GUILLEMOT. Many breed on the cliffs. The times of arrival and departure and their movements correspond with those of the Razorbill.

Uria grylle grylle. THE BLACK GUILLEMOT. Used to breed on the May, but has now apparently ceased to do so. We saw one, and once two, in the sea close to the island from 7-15 May, 1913, but could find no trace of their breeding. We have several times seen the species in October, and there are some isolated winter records.

Alle alle. THE LITTLE AUK. Occurs occasionally in the seas round the island, and is sometimes driven ashore, between 22 October and 27 February.

Fratercula arctica arctica. THE PUFFIN. Some breed on the island. They seem to arrive on the cliffs rather later than the Guillemots and Razorbills, but leave about the same period.

Thalassidroma pelagica. THE STORM PETREL. One was recorded on 5 June, 1916, and there are a good many records at the lantern in October and November.

Oceanodroma leucorhoa. LEACH'S PETREL. One was captured at the lantern on 6/7 October, 1908.

Puffinus puffinus puffinus. THE MANX SHEARWATER. Occurs in the Firth about the island in flocks from May to October, and has several times been taken at the lantern during that period.

Puffinus griseus. THE SOOTY SHEARWATER. We saw single birds flying about close to the island on 16 October, 1910, 4 October, 1911, and 20 October, 1913, while two appeared on 3 October, 1912.

Fulmarus glacialis glacialis. THE FULMAR. We twice saw a Fulmar close to the island in May 1914.

Colymbus immer. THE GREAT NORTHERN DIVER. Mr. Agnew records one on 19 December, 1882, Mr. Ross saw one close to the island about 1905, and Mr. W. Evans another on 3 February, 1912.

Colymbus stellatus. THE RED-THROATED DIVER. Mr. Agnew notes one on 20 January, 1882, and we saw one on 4 & 10 May, 1913.

Podiceps auritus. THE SLAVONIAN GREBE. A Grebe in winter plumage, probably this species, was seen by us just off the island on 24 & 28 October, 1909.

Podiceps fluviatilis fluviatilis. THE LITTLE GREBE. One was killed at the lantern on 22 March, 1909, and there are one or two records in September and October.

Rallus aquaticus aquaticus. THE WATER-RAIL. There are a good many records of single birds, chiefly at the lantern, in October and November.

Crex crex. THE CORNCRAKE. A bird of double passage, passing in spring in the end of April and May, and in autumn in August and September, while a late straggler occurred on 2 November, 1914.

Gallinula chloropus chloropus. THE MOORHEN. One was killed at the lantern on 2 April, 1908, and another found dead on 11 May of the same year. On 23 March, 1909, one appeared, and two were seen on the North Ness on 27 May, 1911.

Fulica atra. THE COOT. On 1 February, 1917, one arrived on the loch and remained about a fortnight.

Columba oenas. THE STOCK-DOVE. Single birds have been recorded at irregular intervals in May, September, and October.

Columba palumbus palumbus. THE WOOD-PIGEON. A bird of double passage and an occasional winter visitor. Spring movement is recorded from March to May, and autumn from September to November. In the eighties of last century much larger numbers are noted than now occur.

Columba livia livia. THE ROCK-PIGEON. Single birds are recorded in 1884 and 1885; and in 1911 Mr. W. Evans told us that a pair of Rock-Doves bred on the cliffs of the May in 1909, but he adds, "probably only the descendants of the dovecote pigeons that do duty as Rock-Doves on the Berwickshire coast."

Streptopelia turtur turtur. THE TURTLE-DOVE. There are a good many records in May and June, one in August, and one in September.

Syrhaptes paradoxus. PALLAS' SAND-GROUSE. The Isle of May participated in the great immigration of Sand-Grouse which took place in 1888, three being shot there on 30 May of that year.

XV.—*Notes on some Birds of the Bessarabian Steppe.*

By MAUD D. HAVILAND, H.M.B.O.U.

THE following notes were made during July, August, and September 1917, over an area of some twenty square miles, in the extreme south-western angle of Bessarabia, bounded by the Lower Danube and the Pruth. They are necessarily scanty, for the military position often forbade the use even of binoculars, but no bird has been included unless I was well assured of its identity. For the most part the country was high open steppe, but some of the valleys were sparsely wooded with acacia and other trees, and there maize, barley, etc., were cultivated. The great marshes of the Dobrudja lay immediately in front of our camp, but unfortunately were out of bounds for ornithological exploration, as they were in enemy hands.

Corvus cornix. HOODED CROW. Common. Feeds gregariously with the next species.

Corvus frugilegus. ROOK. Very common. Numbers increased during September, possibly by immigration.

Corvus monedula. JACKDAW. Frequent. Probably breeds in the clay cliffs round the valleys. The nape of the neck in the Bessarabian Daw is markedly paler than in the British bird.

Pica pica. MAGPIE. Abundant.

Sturnus vulgaris. STARLING. Possibly breeds, but not recorded till mid-September when considerable flocks were seen.

Oriolus oriolus. GOLDEN ORIOLE. Somewhat scarce.

Carduelis cannabina. LINNET. Not uncommon in the open country.

Passer domesticus and *Passer montanus*. SPARROW. At Odessa, apparently the only Sparrow found round dwellings is *P. domesticus*, though *P. montanus* occurs along the cliffs; but west of the Dniester, as I observed while driving from Bolgrad to Odessa, the Tree-Sparrow is as common as the House-Sparrow round buildings, where the two species live side by side, until at Reni (on the Roumanian frontier) the Tree-Sparrow outnumbers the House-Sparrow by two to one. It also breeds freely out in the country.

Emberiza calandra. CORN-BUNTING. Occasional near cultivated ground.

Galerida cristata. CRESTED LARK. Abundant.

Motacilla flava. BLUE-HEADED WAGTAIL. Occasional on the banks of the Danube.

Motacilla alba. WHITE WAGTAIL. Common. Considerable flocks appeared in stormy weather with westerly winds on August 16-17.

Anthus campestris. TAWNY PIPIT. Not common.

Parus cæruleus. BLUE TIT. This species and the next are not infrequent in the valleys.

Parus major. GREAT TIT.

Lanius minor. LESSER GREY SHRIKE. Very abundant in the valleys until the end of August, when both old and young disappeared.

Lanius collurio. RED-BACKED SHRIKE. Much less frequent than the last, though nesting sometimes in an adjoining tree. Remains till mid-September.

Phylloscopus trochilus. WILLOW-WREN. Appeared in considerable numbers in mid-September.

Sylvia communis. WHITETHROAT. Breeds abundantly in the valleys.

Phœnicurus phœnicurus. REDSTART. Three birds, evidently on passage, seen late in September.

Enanthe œnanthe. WHEATEAR. Not infrequent on the steppe round the ruins of huts and earthworks. Two or three pairs nested in some empty Russian trenches by our camp.

Saxicola rubetra. WHINCHAT. Two birds of the year recorded on Sept. 16, but there was no evidence that it breeds.

Muscicapa grisola. SPOTTED FLYCATCHER. Half a dozen appeared on Sept. 12 and remained for a day. I had not previously noticed this species; but it possibly breeds in the wooded valleys.

Hirundo rustica. SWALLOW. Fairly common.

Delichon urbica. MARTIN. Abundant in the villages.

Riparia riparia. SAND-MARTIN. Breeds in swarms in the banks round the Danube. On August 11, when motoring along the causeway road to Galatz, I found the telegraph-wires crusted with literally thousands of Hirundines, but the present species outnumbered the rest by a hundred to one. The rushing of their wings, and their cries as they took flight, was so bewildering in the narrow road, that I had to slow the car down.

Micropus apus. SWIFT. Occasional.

Caprimulgus europæus. NIGHTJAR. Once observed in August at dusk.

Merops apiaster. BEE-EATER. Common until the third week in August, when they somewhat suddenly disappeared.

This species attends the Rooks who feed on horse-dung on the steppes, and swoops upon any winged insect put up by the larger birds.

Coracias garrulus. ROLLER. Common in the open country, especially near telegraph-poles. Still frequent in October.

Upupa epops. HOOPOE. Frequent.

Carine noctua. LITTLE OWL. Once recorded in a hollow willow-tree.

Falco tinnunculus. KESTREL. Very common on the open steppe.

Falco vespertinus. RED-FOOTED FALCON. This species and the Roller are the most characteristic birds of the Bessarabian steppes.

Buteo buteo. BUZZARD. Common.

Nyroca fuligula. TUFTED DUCK. Huge flocks on Itolia Lake on September 15.

Ciconia ciconia. WHITE STORK. Frequent, especially round Reni.

Vanellus vanellus. LAPWING. Not found breeding, but two flocks flew over from the Dobrudja late in August.

Hydrochelidon leucopareia. WHISKERED TERN. Breeds numerously in the Pruth marshes near Reni.

Larus melanocephalus. MEDITERRANEAN GULL. Not uncommon on the Danube and neighbouring lakes.

Coturnix coturnix. QUAIL. Abundant, especially on cultivated ground.

XVI.—*Further Notes on the Birds of Macedonia.*

By Captain ALEXANDER G. L. SLADEN, R.E.

THE following notes have been compiled from observations made since the writing of those which appeared in 'The Ibis' of July 1917, and include a period up to 7 July, 1917, on which date I left the country.

Pastor roseus. ROSE-COLOURED STARLING. A single bird was noticed on 21 March, and several flocks which settled on trees to rest for a few minutes during flight, May 28 to June 20.

Oriolus oriolus. GOLDEN ORIOLE. These birds do not appear to breed in Macedonia, but pass through during migration.

Carduelis carduelis. GOLDFINCH. I noticed pairs occasionally up to May 1, but the large flocks which were common in winter had all disappeared. A few birds may remain to breed, but they cannot be plentiful. This was the only representative of the Finches which I ever saw after the middle of March.

Passer domesticus. HOUSE-SPARROW.

Passer montanus. TREE-SPARROW.

Passer hispaniolensis. SPANISH SPARROW.

All these birds bred. The last-named species appeared to be very local.

Emberiza citrinella. YELLOW BUNTING. Was not seen after the middle of March.

Emberiza cirlus. CIRL BUNTING. Only a few pairs remained to breed. During the breeding-season this was the least common of all the Buntings.

Emberiza melanocephala. BLACK-HEADED BUNTING. This handsome bird arrived in the beginning of May, the males preceding the females by a few days. The first nest I found

contained one egg on May 15. By this date there were pairs everywhere. I saw birds building up to June 6. The nest was invariably placed when possible in low scrubby brambles, six to eighteen inches from the ground, and was very little concealed. When building-sites of this kind were not available, a low thorn-bush was sometimes chosen. I came across twenty nests between May 15 and 23. I never saw the male bird take any part either in building the nest, in incubation, or in feeding the young, though it is possible he shares the last task with his mate. During the first two operations he confines himself to sitting on a bush a few yards from the nest and continually uttering his short and rather monotonous song. He is always extremely tame, allowing one to approach to within eight or ten yards or closer.

Emberiza hortulana. ORTOLAN BUNTING. Was not found breeding, but was probably overlooked. Not seen in winter.

Emberiza cia. MEADOW-BUNTING. Was noticed during December and onwards in considerable numbers among the rocky hills. Bred commonly.

Emberiza miliaria. CORN-BUNTING. By far the commonest of all the Buntings. In winter, they congregated in flocks, and in spring distributed themselves in pairs all over the country, breeding everywhere.

Alauda arvensis. SKY-LARK. Was not found breeding, and I did not come across any of this species after the beginning of May.

Lullula arborea. WOOD-LARK. All these birds disappeared with the advance of spring. During winter they were common in small flocks in the hilly country.

Melanocorypha calandra. CALANDRA LARK. Bred freely: I found eggs from March 29 to June 18. On the latter date they were unincubated.

Galerida cristata. CRESTED LARK. Found breeding, April 20 to June 24.

Calandrella brachydactyla. SHORT-TOED LARK. Found breeding commonly, April to end of June.

Motacilla alba. WHITE WAGTAIL. This bird, which was exceedingly common during winter all over the country, seemed to disappear entirely in the spring. I, however, saw one pair on the banks of the Vardar on the 1st of May,

Motacilla melanocephala. BLACK-HEADED WAGTAIL. Unfortunately, I was not in suitable country during the breeding-season of this bird; but I visited the Vardar marshes close to Salonica on June 29, and found literally thousands of adult and young birds, some of the latter only just fledged, which were still being fed by parent birds. We had recently had heavy rains, and much of the ground was flooded. This had evidently compelled many broods to leave their breeding-grounds and to congregate in the drier parts.

Lanius senator. WOODCHAT. A single example only seen, near the Vardar River, May 18.

Cettia cetti. CETTI'S WARBLER. I first came across this bird when I visited the shores of Lake Ardzan about March 19; it was then common, remaining throughout the spring and breeding.

Ænanthe œnanthe. COMMON WHEATEAR. Fairly common; first noticed March 21, and a nest found with unincubated eggs, June 21.

Ænanthe stapazina xanthomelæna. EASTERN BLACK-THROATED WHEATEAR. Nest found with five eggs, May 9.

Hirundo sp.? (A red-bellied Swallow.) Was quite common and bred freely.

Micropus apus. SWIFT. Noticed a number hawking for flies over Lake Ardzan on May 23 for the first time. Thereafter I seldom saw any.

Caprimulgus europæus. NIGHTJAR. Secured a specimen on May 28. I had first noticed it about a week earlier.

Merops apiaster. BEE-EATER. Saw a pair on June 2, and hundreds later.

Upupa epops. HOOPOE. Found breeding, May and June.

Alcedo ispida (*pallida*?). KINGFISHER. Found a pair with young, June 1. This species also remains throughout the winter.

Coracias garrulus. ROLLER. First noticed about May 3, and was very common later. Nests were reported, but I did not see any myself.

Carine noctua. LITTLE OWL. Common all over the country. One pair nested in my dug-out, between the supports of the roof and the ground-level.

Gyps fulvus. GRIFFON VULTURE. A few mixed with the Egyptian Vultures. First seen, June 1.

Neophron percnopterus. EGYPTIAN VULTURE. Single examples were noticed flying high as early as March 30; but large numbers arrived in June, many of them being apparently birds of the year.

Phalacrocorax carbo. CORMORANT. Thousands frequented Lake Ardzan during the winter and early spring, and a few remained throughout. There was a smaller bird of this kind which I did not identify. It was as common as the former species, and a few also remained.

Pelecanus sp. ? (A white Pelican which appeared through glasses to have a pink tinge on the breast.) Small flocks of these appeared on Lake Ardzan during April and May.

Anser anser. GREY-LAG GOOSE. In May I heard from some officers of the A.S.C. that two nests of "Grey Geese" had been found in the previous March. After further enquiry, I discovered that one of the chaplains and another officer had found one of these nests which contained four

eggs, of which they took one. Another officer had taken a nest of five eggs. I spoke to all of these officers, and was taken to the old nest, which was situated on a floating island among dense reeds on the lake. Unfortunately it had lately been occupied by a Mallard. Of the eggs originally taken, three had been sent home to England and apparently lost in transit, and the remainder had become broken and were thrown away. There was no doubt, however, that they were the eggs of a "Grey Goose," as it was the constant coming and going of these birds which had led to the discovery of their nests. I myself had seen geese swimming in the lake with goslings. During the whole of the time I was in this neighbourhood, which was up to the end of May, there were seventeen to twenty geese (in all probability Grey-lag) frequenting the lake.

Tadorna casarca. RUDDY SHELDRAKE. I found three or four pairs breeding on Lake Ardji Gheul near Naresch in June. Two had broods of young, and other birds evidently had nests which I failed to find at first. I eventually found one with half-incubated eggs. I had not noticed this species until the end of March, and am inclined to think it does not winter here.

Anas boschas. WILD DUCK. This species bred in small numbers on Lake Ardzan.

Querquedula querquedula. GARGANEY. Seen in fair numbers up to the end of March, but I found none breeding.

Spatula clypeata. SHOVELER. Found breeding.

Netta rufina. RED-CRESTED POCHARD. There was a flock of some forty to fifty birds on Lake Ardzan all through the spring. About April the males were in a flock by themselves, with only one or two females among them. The ducks were evidently mostly sitting at that time, for later on they appeared now and again with their broods. They were, however, very shy and always kept close to the dense reed-beds.

Nyroca ferina. POCHARD. Many birds were noticed on Lake Ardzan during April, May, and beginning of June. I have no doubt some were breeding, but I found no nests.

Nyroca fuligula. TUFTED DUCK. Never common, and not noticed at all after the end of March.

Egretta alba. GREAT WHITE HERON. I saw one bird which appeared to belong to this species on April 17. It was very shy, and I could only examine it through glasses at some distance.

Egretta garzetta. LITTLE EGRET. Single birds were observed on Lake Ardzan from the middle of April onwards.

Ardeola ibis. BUFF-BACKED HERON. These were fairly common on Lake Ardzan, arriving about the middle of April.

Ardeola ralloides. SQUACCO HERON. These were fairly common on Lake Ardzan in varying numbers. They were first noticed about April 15.

Nycticorax griseus. NIGHT HERON. I secured a female on April 29. They were at no time common.

Ciconia ciconia. WHITE STORK. This bird is common all over the country, and breeds in considerable numbers in and near villages. I counted over thirty-five pairs in the evacuated village of Karasuli, near the Vardar. They arrived at the end of March.

Ciconia nigra. BLACK STORK. I saw a flock of eighteen of this species near Naresch about the middle of June, but at no other time.

Otis tarda. GREAT BUSTARD. I saw two birds which were apparently of this species on the plain near Hirsova at the beginning of June. They had often been reported to me as frequenting that district.

Otis tetrax. LITTLE BUSTARD. Later observations proved that these birds remained throughout the whole spring in the district. I secured specimens up to July. They no longer went about in flocks, but I frequently flushed single birds from the long grass which covers the great tracts of uncultivated land. On June 17 I secured a female with incubation spots. I have no doubt that this species breeds throughout the country, and it was only the vast amount of cover and the lack of time which prevented me from finding nests.

Edicnemus edicnemus. STONE-CURLEW. First noticed May 14. I found two eggs May 16, and thereafter I found this bird all over the country in pairs—also several nests.

Glareola pratincola. COLLARED PRATINCOLE. On June 8 I visited Lake Ardji Gheul, and found these birds just beginning to breed. At this time the sun was so hot that the parent birds were obliged to cover their first egg to protect it, and as intervals of two days often separated the laying of a second, and another one or possibly two days elapsed before the third made its appearance, there was a good deal of discrepancy in the incubation of the clutch. Eggs were laid in a slight depression scratched out of the dried mud which fringed that part of the lake. These nests were lined in most cases with small whitish pebbles or bits of dried mud about the size of peas. The eggs harmonised so well with their surroundings that even after having watched a bird leave the nest, I had some difficulty in finding it. Parent birds feigned lameness and injuries by stretching themselves on the ground with wings extended, or by trailing a leg behind them and hopping on the other supported by one wing. The heat of the sun compelled birds to cover their eggs almost as soon as they had left them, and in a short time there were several within twenty-five yards of me. The full complement was three, but there were several nests which never had more

than two. I had many opportunities during the month which followed of observing the habits of this species.

Tringa alpina. DUNLIN. } A few remained all the
Tringa minuta. LITTLE STINT. } spring until July.

Totanus totanus. REDSHANK. Several pairs were seen during June on Lake Ardji Gheul, and from their behaviour appeared to have young, but I was unable to find any.

Numenius phaeopus. WHIMBREL. Shot one out of a flock on Lake Ardzan, March 22.

Himantopus himantopus. BLACK-WINGED STILT. Of all the Waders this was the commonest during the month of June. On June 21 there was a violent thunderstorm, accompanied by a strong south-westerly gale. The following day I visited Lake Ardji Gheul and found the whole of the northern shore and the northern edges of several small pools strewn with scores of the eggs of this species. Many had built their nests, which were small mud mounds, on half-submerged mud islands which the heavy rain had again submerged so that the eggs were swept away. There were a few Avocets' eggs among them. A more fortunate site had been selected by another colony, and the nests had been placed in tufts of reedy grass standing well above but surrounded by shallow water on the sheltered eastern edge of the lake.

Recurvirostra avocetta. AVOCET. Found nesting fairly commonly on Lake Ardji Gheul; it doubtless bred in other similar localities.

Ægialitis hiaticola. RINGED PLOVER. I noticed these birds just at the end of May, but I was credibly informed that they were common on Lake Ardzan during the winter and early spring. I found a nest containing one egg on Lake Ardji Gheul, June 8.

Ægialitis alexandrina. KENTISH PLOVER. Found breeding in some numbers, June 8, on the shore of Lake Ardji Gheul.

Vanellus vanellus. LAPWING. Almost all migrated in the spring, but two pairs remained and bred at Lake Ardji Gheul.

Sterna anglica. GULL-BILLED TERN. I first noticed three pairs on Lake Ardji Gheul, June 18. They were very noisy, and appeared to resent my intrusion. I did not see any more of these birds, although I visited the same spot frequently during the month. I did not find any of the five species of Terns breeding, but as I was unable to visit much of the most suitable ground after the end of May, my observations on this point are of little value. I should be very much surprised if *Hydrochelidon nigra* does not breed in considerable numbers in the neighbourhood of Lake Ardzan.

Porzana porzana. SPOTTED CRAKE. One was secured about April 19—a female, with half-formed eggs.

Birds not positively identified.

Cygnus sp. A pair of white Swans flew over Lake Ardzan low down (about 80 feet), March 21.

Numenius arquatus. CURLEW. I shot one out of a flock which exactly resembled this species, but the bill was so excessively long ($10\frac{1}{2}$ inches from base to tip) that I was not sure of its identity.

Circus æruginosus. MARSH HARRIER. General colour (winter) chocolate, lighter (almost yellow) on the top of the head, under the chin, and on the shoulders. Very common in marshy ground. Found a nest with three eggs (white) in long reedy grass in swamp at Lake Ardji Gheul, June 22. Nest was built of sticks and reed-stalks, about 2 ft. 6 ins. in diameter, on the ground. The bird is common, summer and winter. Size slightly smaller than the Common Buzzard.

Circus sp. A Hawk with white rump, which is very conspicuous when flying, was seen on several occasions. I did not secure a specimen.

XVII.—*Obituary.*

CHRISTOPHER JAMES ALEXANDER.

C. J. ALEXANDER was born on 24 March, 1887, and was killed or died of wounds on 4 or 5 October, 1917. He was the son of Joseph Gundry Alexander and was born at Croydon; he was educated at Bootham School, York, and the South-Eastern Agricultural College, Wye, at both of which he obtained scholarships; he took his degree (B.Sc. Agric.) in 1908, and remained at Wye on the staff for another year. After devoting some time to mycological work in England, he went in 1909 to Rome as rédacteur in the International Institute of Agriculture, and continued that work until the beginning of 1916, when he returned to England to join the Army.

From his earliest years he showed the same love of natural history which continued to the end. During several months spent at Arcachon, when he was not twelve years old, he kept daily lists of the birds he saw. Whilst he was at school he kept careful diaries of observations on birds, plants, and insects; after he left school he continued daily notes of things seen and heard—including the song of birds, the first blossoming of flowers, appearance of certain insects, and appearance, increase, decrease, departure, and passage of migrants—until the day of his death.

He made very careful observations of bird-distribution and migration, first in Kent and other parts of England, and afterwards in the Province of Rome, where ecological study was of unusual interest, since he was able to obtain a pretty full knowledge of each zone from the Mediterranean to the Alpine, all within a radius of thirty miles.

In Flanders, too, he kept lists of the birds observed throughout the autumn and winter in the various departments and environments, from the prolific avifauna of the lower Somme in July to the sparse bird-life of the chalk-downs further north in mid-winter.

Early in 1917 he broke his leg, and was sent to England, where he remained in hospital at Newport, Mon., for a month, and then completed his convalescence by the River Usk, and later at Shoreham and Sittingbourne, returning to France at the end of July.

He was always shy and retiring, and did not easily make friends ; he preferred to enlist as a private in the Army, where he soon became generally loved for his universal kindness and modest generosity to all whom he could help. It was typical of him that it was only after his death that any of his family learnt, from one of his Italian friends, that in one of the battles in which he took part he had captured a German prisoner and shared his last biscuit and water with him.

In advancing through the barrage to support the front line in one of the great Passchendaele battles on 4 October, 1917, he was hit by a shell and severely wounded ; he appears to have died or been killed later the same day, after being put on an ambulance.

He became a member of the Union in 1911.

Much of his work remains unpublished, but the following articles from his pen, besides shorter notes, appeared in 'British Birds' :—

"Some Observations on the Song-Periods of Birds," i. 1907-8, pp. 367-72.

"On a Plan of mapping Migrating Birds in their Nesting Areas," ii. 1908-9, pp. 322-6.

"The Notes of the British Willow-Tit," iv. 1910-11, pp. 146-7.

"Further Observations on the Song-Periods of Birds," iv. 1910-11, pp. 274-8.

"Notes on Zonal Distribution in the Mountains of Latium," xi. 1917-18, pp. 74-82.

"Observations on Birds singing in their Winter-Quarters and on Migration," xi. 1917-18, pp. 98-102.

H. G. A.

FERGUS MENTEITH OGILVIE.

We much regret to report the death from pneumonia of Mr. Ogilvie, which took place at his house at Oxford on 17 January last.

Born in London on 2 November, 1861, he was the son of Alexander Ogilvie, and was educated at Rugby and Cambridge, where he graduated M.A. and M.B. He was also F.R.C.S. England and L.R.C.P. London. He owned a beautiful estate in Argyllshire, Barcaldine, which formerly belonged to his mother, and a house at Sizewell in Suffolk.

Mr. Ogilvie became an ophthalmic surgeon and settled in Oxford in 1899, where he practised in partnership with Mr. Doyne. On giving up private practice in 1905, he was appointed Consulting-Surgeon to the Oxford Eye Hospital, a post which he retained till his death. It was his mother who founded the Margaret Ogilvie Readership in Ophthalmology in the University of Oxford.

From his boyhood Mr. Ogilvie was devoted to the study of birds. British birds and their habits especially interested him, and much of his spare time was devoted to field-work. He was cautious in accepting the evidence of others, and did not do so unless quite satisfied in his own mind as to their validity. His interest and attention was specially devoted to the sea- and shore-birds: ducks and geese, waders and game-birds—upon all of which he was a very reliable authority.

His collection of British birds, beautifully set up, is very fine and comprehensive, and was exhibited in a special museum-room erected at his home in Suffolk. He had also an extensive series of skins, also admirably prepared and carefully labelled, and forming one of the most important private collections of the kind in Great Britain.

His natural reserve and dislike of ostentation militated against even his more intimate friends gaining a real insight into the trend of his thoughts and the extent and nature of his observations. He seems to have published

but few of his vast store of notes, and it was only during the last few weeks before his death that he was engaged in putting into definite form some of the results of his researches.

Ogilvie became a member of the Union in 1892, and was an original member of the B. O. C., the meetings of which he occasionally attended. He exhibited a pair of Red-crested Pochards killed in Suffolk in 1904, and made another communication to the Club in 1909 on the subject of an immature Golden-eye, also killed in Suffolk, which he believed to be Barrow's Golden-eye (*Glaucionetta islandica*), but which was subsequently shown to be the common species (*vide* B. O. U. List, new ed., p. 346).

He leaves a widow and one daughter, and his death is not only a loss to ornithology but also to the Oxford Eye Hospital and other institutions with which he was closely connected.

We are indebted to a notice in the 'Oxford Chronicle' of 26 January last for most of the information contained in this article. It was written by his friend Mr. Henry Balfour, Curator of the Pitt-Rivers Museum at Oxford.

FRIEDRICH HERMANN OTTO FINSCH.

The announcement of the death of Prof. Dr. Otto Finsch, which took place at Brunswick on 31 January, 1917, has, we regret to say, only recently reached us. Dr. Finsch was the oldest of the Honorary Members of the Union, having been elected as long ago as 1872.

Born at Warmbrunn in Silesia on 8 October, 1839, Finsch was brought up in business, and, so far as ornithology was concerned, was entirely self-taught. In 1858 he acted as a private tutor to a family at Rustchuk in Bulgaria, and his earliest contribution to ornithology was a paper on the birds of that country, published in the 'Journal für Ornithologie' in 1859. In 1861 he became a Scientific Assistant in the Museum at Leyden under Schlegel and began to write regularly on birds in his chief's

journal, the 'Ned. Tijdschrift Dierkunde.' He returned to Germany in 1864 to succeed Hartlaub as the Curator of the Museum at Bremen. His monograph on the Parrots appeared in 1867, and is one of the best pieces of systematic work of that period. In the same year appeared his 'Ornithology of Central Polynesia,' in which he collaborated with Hartlaub. Three years later the same authors published 'Die Vögel Ost-Afrikas,' which formed the fourth volume of the account of the travels of Carl von der Decken in East Africa and was issued as a memorial to that ill-fated explorer. This work was the foundation of our knowledge of the birds of East Africa and is well known to all workers on African ornithology.

About this time Finsch began to visit England, where he was very well known to many of the ornithologists of the mid-Victorian age. He was invited to prepare a report on the birds collected during the Abyssinian campaign by W. Jesse, which was published in the 'Transactions of the Zoological Society' in 1870, while his first paper in 'The Ibis' on some New Zealand birds collected by Julius von Haast appeared in 1869.

He made excursions to California in 1872 and to Lapland in 1873, and three years later he accompanied Alfred Brehm and Graf Walburg-Zeil-Trauchburg in a journey of zoological exploration in western Siberia. This expedition was undertaken on behalf of the Bremen Geographical Society, and Finsch sent some letters describing his route and the birds met with to 'The Ibis,' which will be found in the volume for 1877.

Finsch was now a traveller of considerable experience, and, having resigned in 1878 his Curatorship of the Bremen Museum, he started off on his first great journey to the South Seas, assisted by the Humboldt fund in Berlin; this occupied the years 1879-1882. He visited the Polynesian Islands, New Zealand, Australia, and New Guinea, and sent to 'The Ibis' for 1880-82 a series of nine letters describing his progress and his ornithological experiences.

His second journey to the Pacific in 1884-6 was of a more dramatic nature. The peaceful bird-collector became Bismarck's Imperial Commissioner, and it was through his efforts and negotiations that the northern portion of New Guinea together with New Britain and Ireland became German territory, and were renamed Kaiser Wilhelm's Land and the Bismarck Archipelago. Finsch's own name is recorded in Finsch Hafen, the capital of the Colony.

From 1886 to 1897 Finsch lived near Bremen, working out his South Seas collections and specially his ethnographical material, while he published an account of his momentous journey in 1888 under the title "*Samoa Fahrten*," an allusion to the name of the vessel in which he travelled out to the islands. He returned to Leyden as Curator of the bird collections of the Rijk-Museum in 1898, having been appointed to succeed Büttikofer, and in 1904 he went back to Germany as Curator of the Ethnographical section of the Municipal Museum at Brunswick, a post which he held until his death.

In addition to the larger works, the most important of which have been already mentioned, Finsch published a large number of papers in '*The Ibis*,' the '*Journal für Ornithologie*,' and in many other periodicals. His publications number over 150. He described 14 new genera and 155 new species of birds, while 24 bear his name, as well as many other animals and plants discovered during his travels.

A complete account of his travels and of his literary and scientific activity will be found in a little volume published at Berlin in 1899 under the title '*Otto Finsch: Systematische Uebersicht der Ergebnisse seiner Reisen und schriftstellerischen Thätigkeit (1859-1899)*.'

His work in ornithology was entirely systematic, and it was accurate and reliable, but during the last twelve years he had given up the study of birds for ethnology, so that his name is not so well known among the younger workers in ornithology, but he was one of the best of the old school of German workers.

EDWARD SNOW MASON.

We much regret the delay in noticing the death of Colonel Mason, which occurred at Lincoln on 13 March, 1917. He was elected a member of the Union in 1897.

The late Colonel was born in 1838 and was the son of Richard Mason, for many years Town Clerk of Lincoln. He was educated at Rugby and entered the Army in 1854. He saw a good deal of service in India, where he was during the latter part of the Mutiny campaign. During the last five years of his service, which ended in 1895, he was Hon. Colonel Commanding the 3rd Battn. Lincolnshire Regiment. Long before his retirement from the Army, Colonel Mason had interested himself in the public life and many of the commercial undertakings of Lincolnshire. He was a Magistrate and for some time Chairman of Petty Sessions, and a Director of Joseph Rodgers & Sons of Sheffield and Clayton & Shuttleworth and of other well-known companies.

As regards ornithology he had a valuable collection of albino birds, as well as of albinos in other groups of animals. This remains in the possession of his son Richard, to whom it was bequeathed. He was also a good shot and a well-known sportsman in Lincolnshire.

SIR HENRY JAMES JOHNSON.

Sir Henry J. Johnson, who died from pneumonia at his house in Sloane Gardens, S.W., on the 1st of March, 1917, was elected a member of the B. O. U. in 1915. We regret that a notice of his death has not been previously given.

The son of Manuel John Johnson of Oxford, Radcliffe Observer, Sir H. Johnson was born in 1851 and was educated at Oxford where he graduated M.A. He was admitted Solicitor in 1879. He was eventually the head of the well-known firm of Waltons, Solicitors to the Corporation of Lloyds and to many of the principal shipping firms. He was President of the Law Society in 1910-11, in which latter year he was knighted.

Sir Henry Johnson took great interest in birds and became a member of the Union and the Club, the dinners of which he occasionally attended, but he did not, so far as we are aware, make any original contributions to ornithology.

GEORGE HOGARTH DAWSON.

We regret to record the death of Mr. G. H. Dawson, which occurred very suddenly on 12 October, 1917, in London.

Born in 1845, he was a member of Lloyds and was head of the firm of Dawson Brothers. He was a keen sportsman and a good polo player, but had to relinquish the game owing to a severe accident. He was also an enthusiastic fox-hunter and rode with the Essex hounds for 59 seasons. After his accident at polo he continued to hunt, riding on a lady's side-saddle, as he was unable to sit on an ordinary cross-saddle.

He was keenly interested in bird-life and a good observer, and was elected a member of the Union in 1915.

We also regret to have to record the recent death of Prof. Martorelli of the Civic Museum at Milan, a Foreign Member of the B. O. U. since 1903. We hope to publish a notice of his ornithological activities in the next number of 'The Ibis.'

XVIII.—*Notices of recent Ornithological Publications.*

Andrews on Fossil Birds from Glastonbury.

[Report on the remains of Birds found in the Glastonbury Lake Village. By C. W. Andrews. Extract from "The Glastonbury Lake Village," by A. Bulleid and H. St. George Gray, vol. ii. pp. 632-637, fig. 179, 1917. 4to.]

This is a reprint of an article previously published by the author in 'The Ibis' for 1899 (pp. 351-358) with some additional notices of bones found since that date, at the

Glastonbury lake-village. No additional species are recorded.

The most interesting bird recognized among the remains is the Crested Pelican (*Pelecanus crispus*), of which large numbers of bones have been collected, and which not improbably bred there and was used as food by the inhabitants. It is not known at the present time in western Europe, but is now found from the lower Danube regions eastwards to India. Some of the bones are figured.

Beebe on Guiana Birds.

[Tropical wild-life in British Guiana. Zoological contributions from the Tropical Research Station of the New York Zoological Society. By William Beebe, Directing Curator; G. Inness Hartley, Research Associate; and Paul G. Howes, Research-Assistant. With an Introduction by Colonel Theodore Roosevelt. Vol. i. pp. 1-504; 143 plates and figures. New York (New York Zoological Society), 1917. 8vo.]

Under the auspices of the New York Zoological Society, Captain Beebe, M.B.O.U. (for he now holds a commission in the Aviation Service of the American Army), has recently established a research station at Bartica in the interior of British Guiana for conducting investigations into tropical biology.

The present volume, which was briefly alluded to in the January number of 'The Ibis' (p. 187), contains the first results obtained during a sojourn of some six months of 1916 at this delectable spot. Situated at the junction of two magnificent rivers, the Essequibo and the Cuyuni, with untouched and almost untrodden aboriginal forest within a mile of the house where the station is placed, it is an ideal spot for a naturalist. There is no doubt that far better results in the matter of collection and observation can be obtained by working from a fixed centre, and that this is so is clearly proved by the present volume.

The first six chapters are introductory in character, and tell us something of the history of the district and of previous workers in Guiana, also of the general plan of the observations carried on at the research station.

Then follows lists of birds with their colonial and Indian names, and of the methods pursued to obtain an insight into their habits. In the space of five months, within a rectangle of clearing and jungle measuring two miles by half a mile, Captain Beebe and his companions became acquainted with two hundred and eighty-one species of birds. Unlike many previous naturalists he was astonished at the wealth and abundance of both individuals and species in the primæval forest. He has a good deal to say on variation in the roosting habit, on mixed bird-parties, on protection by coloration, and on the fact that he never found butterflies in the stomachs examined, and many other similar problems. A special chapter is devoted to the Hoatzin (*Opisthocomus*) which, however, is not met with at Bartica, but on the Berbice River in another part of the Colony. The young of this ancient form is quadrumanous, using its wings, which are clawed, as well as its legs for climbing about in the bushes in which it is hatched, and, if driven to it, diving into the water and swimming freely and well.

Another chapter is devoted to the Tinamous, one genus of which (*Tinamus*) has the hinder aspect of the tarsus roughened, the scales forming a series of corrugations; while the other genus (*Crypturus*) has the tarsus quite smooth. Captain Beebe discovered that this fact is explained by the habits of the birds: *Tinamus major* roosts in trees, sitting lengthwise on the branch and resting on its tarsi; while *Crypturus soui* roosts on the ground.

Up to now no definite account of the breeding-habits of any species of Toucan has been given to the world. Captain Beebe and his assistants found five species of these birds at Kalacoon, and between March 15 and May 10 obtained evidence of the breeding of all five, and secured both eggs and young birds. The eggs are laid in a hole in a tree, and often an old Woodpecker's hole is made use of. They are, in the case of *Rhamphastos monilis*, two in number, white in colour, and shaped like a diminutive hen's egg.

In the case of another species, *Pteroglossus aracari*, young birds were obtained—remarkable-looking youngsters, with well-developed heel-pads on which they rest, and move about refusing to make use of their feet and toes.

Many other interesting discoveries are recounted, and suggestions for the solution of many curious problems connected with tropical bird-life are made by Captain Beebe and Mr. Hartley in this fascinating volume; while the third author, Mr. Howes, has devoted himself entirely to entomological problems. The work is profusely illustrated with reproductions of photographs and drawings, and our only quarrel with it is its great weight, due to the use of heavy paper; but we can strongly recommend it to all our readers who are interested in the problems of tropical bird-life.

Chapman on Colombian Birds.

[The Distribution of Bird-life in Colombia; a contribution to a biological survey of South America. By Frank M. Chapman. Bull. Amer. Mus. N. H. xxxvi. 1917, pp. x+729, 41 pls., 21 text-figs.]

The United States of Colombia, formerly known as New Granada, is the northernmost of the South American Republics, and is probably for its size the richest of all the countries of the world for the variety and abundance of its bird-life. Mr. Chapman estimates that there are about 1700 species and subspecies of birds recorded from Colombia. Up to quite recently our knowledge of this rich avifauna was almost entirely based on native-made "Bogotá" skins, which are made primarily for export for millinery purposes.

A few collectors such as Claude Wyatt (*cf.* *Ibis*, 1871, p. 113), T. K. Salmon (*cf.* P. L. Selater & Salvin, P. Z. S. 1879, p. 486), and F. Simons, who collected in the Santa Marta region in 1878-9 for Messrs. Godman & Salvin (*cf.* *Ibis*, 1879, p. 196, and 1880, p. 114), had made a beginning of the exploration of the riches of these regions, and their collections have now all found a home in the Natural History Museum in London. In 1910 the American

Museum began a series of systematic expeditions to various parts of the Colombia. They continued for five years, and were carried out under the direction of Mr. Chapman, who himself visited the country on two occasions—in 1910–11, when he explored the Cauca valley, and in 1913 when he collected in the Bogotá neighbourhood.

The results of the study of the collections amassed during these five years are presented to us in the stout volume before us with an amount of detail and elaboration never previously attempted.

After a historical introduction and a succinct account of the routes traversed by the eight collecting expeditions, a most valuable and novel analysis of the life-zones and faunal areas of Colombia is worked out. North of Ecuador the Andes is split into three ranges by the two parallel valleys of the rivers Cauca and Magdalena, and while the western or Pacific coast is a region of great humidity, there are other regions, such as that round Cattagone and at the mouth of the Magdalena river on the Caribbean sea, which are excessively arid.

Mr. Chapman divides Colombia for distributional purposes into three "zones" according to their altitude, and the zones are again divided into "faunas" or faunal areas, of which there are five in the tropical and two in the subtropical. The tropical zone extends from sea-level to 4500–6000 ft., the subtropical from 4500–6000 ft. to 9000–9500 ft., the temperate from 9000–9500 ft. to 11,000–13,000 ft., the Paramo from 11,000–13,000 to snow-line (15,000 ft.). The distinctness of the faunas and floras of these various zones was a constant source of surprise and a most delightful experience to the author when ascending the various ranges, and some eighty pages, which are devoted to an exposition of the demarcation and the origins of the faunas of the different zones and faunal regions, form perhaps the most fascinating portion of the volume.

The second half of the work consists of a distributional list of the species and subspecies met with, with the usual

taxonomic and zoogeographical comments. These number 1285 out of about 1700 known to inhabit Colombia. Twenty-two new species and one hundred and fifty new subspecies have been described in the course of the work, mostly in previous numbers of the Bulletin of the American Museum. Eleven new forms belonging to the following genera are here described for the first time:—*Zenaida*, *Phæthornis*, *Helianthea*, *Vestipedes*, *Brachygalba*, *Pittasoma*, *Grallaria*, *Troglodytes*, *Henicorhina*, *Cyclaris*, *Pseudochloris*.

The volume is adorned with reproductions of a large number of photographs of scenery, mostly taken by Mr. Chapman himself. These illustrate the different life-zones and faunal regions. There are also many maps to show the distribution of various species, two coloured maps of the distribution of the forests and of the life-zones and faunal regions, as well as one large general map. Finally, four coloured plates of new birds from the talented brush of Mr. L. A. Fuertes, who himself accompanied two of the expeditions, embellish the volume.

We can only conclude this notice by offering our most sincere congratulations to Mr. Chapman on the completion of this splendid piece of work, and to wish that he may be able to continue his explorations on the same lines in other parts of South America.

Evans on the Isle of May.

[Early references to the Bird-life of the Isle of May. By William Evans, F.R.S.E., M.B.O.U. Scot. Nat. 1918, pp. 49-52.]

This short paper contains a number of quotations from the earlier authors in regard to the birds of the Isle of May, and is to a certain extent supplementary or complementary to that of Miss Baxter and Miss Rintoul in the present number of 'The Ibis' (pp. 247-250).

They commence with an extract from the accounts of the King's treasurer in the reign of James IV. in 1508, and finish with a note of the late Mr. E. T. Booth's visit in 1874.

Grinnell and Storer on a new Fox-Sparrow.

[A new race of Fox-Sparrow from the vicinity of Mono Lake, California. By Joseph Grinnell and Tracy I. Storer. Condor, xix. 1917, pp. 165-166.]

The authors of this note add another subspecies of Fox-Sparrow to the eight already recognized in the Check-List. The new race (*Passerella iliaca monoensis*) breeds on the eastern side of the Sierra Nevada in Mono county, California, and is intermediate as regards the size of its bill (the principal distinguishing character of the races) between *P. i. megarhyncha* of the Yosemite valley and *P. i. schistacea* of the Great Basin region of Nevada.

Hartert's recent papers.

[On the Crested Larks of the Nile Valley. By Dr. Ernst Hartert. Nov. Zool. Tring, xxiv. 1917, pp. 439-441.]

Notes on Pheasants. Id. *ibid.* pp. 442-452.]

The subspecies of *Cyanopica cyanus*. Id. *ibid.* p. 493.]

In the first of these short papers Dr. Hartert makes some corrections to the account he gave of the Crested Larks of Egypt in the Vög. pal. Fauna, and also controverts some of the conclusions more recently published by Messrs. Nicoll and Bonhote. Dr. Hartert now recognizes the following:—

Galerida cristata nigricans Brehm. From the Nile delta.

G. c. maculata Brehm. Nile valley from Cairo to Wadi Halfa.

G. c. altirostris Brehm. Nile valley from Wadi Halfa to Atbara.

G. c. isabellina Bp. Atbara to the Blue and White Niles.

The second paper contains a number of taxonomic notes on various forms of the "True Pheasants," which Dr. Hartert, in opposition to the views of the Russian naturalists, Messrs. Buturlin, Alpheraki, and Bianchi, regards as all subspecies of *P. colchicus*. This is followed by a list of these subspecies, thirty-two in number, commencing with

the true *P. c. colchicus*, found on the eastern shores of the Black Sea, and ending with *P. c. satscheuensis* Pleske of Kansu. The Japanese *P. versicolor* is allowed specific rank.

In the third note is described a new form of Blue Pie, *Cyanopica cyanus interposita*, from Corea and Tsinling in Manchuria, allied to the Japanese form.

Murphy on the Colorado Desert.

[Natural History observations from the Mexican portion of the Colorado Desert: with a Note on the Lower Californian Pronghorn and a List of Birds. By Robert Cushman Murphy. Abstr. Proc. Linn. Soc. New York, nos. 24-25, 1917, pp. 43-101; 1 map & 5 plates of photos.]

The first portion of this paper deals with the author's journey in 1915 into the interesting portion of the Colorado Desert lying between the Mexican-United States boundary-line and the head of the Gulf of California, probably the driest and most completely desert-area of the North American continent. Some remarks follow on the zonal and associational status of the region, and the previous work of Grinnell in the more northern portion of the area in the southern parts of California and Arizona are in the main confirmed.

The chief object of the expedition was the collection of examples of a distinct form of Pronghorn (*Antilocapra americana peninsularis*) for the Brooklyn Museum, a task in which only a moderate success was achieved. The collecting of birds was a secondary object, but a list containing the names of 134 species is given, partly based on those collected by Mr. Murphy, partly on a collection made by Mr. S. N. Rhoads some years previously.

Murphy on a new Albatross.

[A new Albatross from the west coast of South America. By Robert Cushman Murphy. Bull. Amer. Mus. N. H. xxxvii. 1917, pp. 861-864; 1 text-fig.]

The Albatross for which Mr. Murphy proposes to form a new subgenus was taken about forty miles off the coast of

Chile: it was collected by Mr. R. H. Beck, and is now in the Brewster-Sanford collection. It is named *Diomedea (Rhothonia) sanfordi*, subgen. et sp. nov.

The character on which Mr. Murphy founds his new subgenus is the shape of the tubular nostril, which is bulging and rotund when viewed from in front, while that of *Diomedea* proper is compressed and oval. The plumage of the new form is remarkable for the absence of all bars or vermiculations.

Lord Rothschild at a recent meeting of the B. O. C. (Bull. B. O. C. xxxviii. p. 39), commenting on Mr. Murphy's new form, states that he believes it is identical with *D. chionoptera* of Kerguelen and Australia. We may also refer Mr. Murphy to the note on p. 64 of the Rev. Fr. d'Orn. for last year, alluded to on p. 330 of the present number.

Oudemans on the Dodo.

[Dodo-Studiën naar aanleiding van de vondst van een gevelsteen met Dodo-beeld van 1561 te Vere. Dor Dr. A. C. Oudemans. Verhandel. Kon. Akad. Wet. Amsterdam, 2^e Sect. xix. no. 4, 1917, pp. 1-140; 15 pls.]

Dr. Oudemans has sent us the following account of his studies on the Dodo, which have recently been published by the Royal Academy of Sciences of Amsterdam, and which we think will be of interest to our readers.

It was in August 1909 that I visited the "ville morte" Vere in the Province of Zeeland, and that I saw there a gable-stone, known to everyone in Vere and to every traveller who has been there; the house is named "In den Struys" (In the Ostrich), or "het Schotsche huis" (the Scottish house). On the gable-stone is engraved a large-billed, thick-necked, short-winged, plume-tailed, thick-legged bird. Though no ornithologist, I immediately recognized the Dodo. But the most remarkable fact is, that the stone bears the date 1561; this is 40 years anterior to the oldest known representation of that extinct bird.

This discovery induced me to make a study of all what has

been published in the 16th and 17th centuries about the Dodo, in print as well as the representations in books, pictures, and paintings. In doing so I came across many facts hitherto neglected, and on these I was able to draw conclusions, which throw a new light upon all kinds of matters. The mass of facts increased in such a manner that I presented my results to the *Koninklijke Akademie van Wetenschappen* (Royal Academy of Sciences) at Amsterdam.

First, then, Dr. Killermann of Regensburg found in 1912, in a beautiful parchment codex at Florence, a figure of the Dodo, which shows so much conformity with that on the gable-stone, that I conclude that both the makers of them had before them a bird of the same species, of the same sex, in the same stage of development, and in the same position.

Secondly, the figure of the Dodo on the frontispiece of de Bry's *Variorum Navigationes*, 1601, agrees in all respects so exactly with that which Killermann found in the parchment codex at Florence, that these two figures must be copies of one original drawing that illustrates one of the many manuscript journals of Van Neck's voyage (1598-1599). Most probably this manuscript is still in Florence.

Professor Millies, of the University of Utrecht, discovered in 1864 in the Library there a figure of the Dodo. It is a pen-and-ink drawing by the well-known painter Van de Venne of 1626. This drawing has so much agreement with the Dodo in the picture by de Hondcoeter at Berlin, that both must have been taken from the living Dodo, that was shown in Amsterdam in 1626.

The relation of Willem van West Zaanen of 1648 is illustrated by a plate, divided in three horizontal sections; in the middle one we see seamen killing penguins. In the letterpress Willem tells us of the killing of Dodos, and the editor Soeteboom, who illustrated the volume, adds:—"haar afbeeltsel is in de vorige Plaat" [her (*i. e.* the Dodo's) representation is in the foregoing Plate]. Now, both Strickland, 1848, and Millies, 1868, remark that on the plate there are represented penguins, not Dodos. Not only these two writers, but also all the later ornithologists have overlooked

the fact, that in reality the killing of the Dodo is represented, namely, in the left half of the lower horizontal section ! The figure is very small, and therefore it must have escaped the attention of the investigators.

There is a communication in De Bry, 1601, that the Dutchmen brought a living Dodo home. Later this tale has been doubted. The representation of a Dodo, discovered by Von Frauenfeld, 1868, in Vienna and attributed to Joris Hoefnagel, is estimated variously to be of 1610 and 1626. But we now know, by the recent researches of art critics, that Hoefnagel died in August 1600 at Prague, where he worked at the court of Rudolf II., who possessed there—like the larger one in Vienna—a small “zoological garden.” Consequently the Dodo must have arrived there between July 1599 (when five ships reached Amsterdam) and August 1600. At Prague there is still preserved a large portion of the skull of that Dodo.

Roelandt Savery has immortalized at least eight different Dodos on his paintings ; these are scattered over the whole of Europe. Where did he paint them ? Where did those Dodos live ? Noll, 1889, boldly and without any grounds, tells us they were all painted at Vienna from one individual, that lived there. At present we know that Savery’s paintings representing Dodos were all made in or after 1626, and that he lived from 1619 up to the time of his death in 1639 at Utrecht. Consequently those paintings were made in Utrecht, or, if not in that town, then still in the Netherlands, from Dodos which lived there (*e. g.* Flushing, Vere, Rotterdam, Amsterdam, or even in The Hague, for here also was a little menagerie).

Cauche described (1651) a Dodo under the name of “oiseau de Nazaret.” The whereabouts of this islet was for centuries unknown. But on certain old Portuguese maps the “Ilha do Nazaret” is found mapped in the position of an island now called “Tromelin,” lying to the north of Mauritius.

In my work I have also made a list of representations (figures, engravings, pictures, etc.) of the Dodo, 125 in

number, all of which I have examined. I have by this means sometimes come across some curiosities, as, for instance, the Dodo in the picture by Franz Francken, 1581-1642, must have been added to it after his death by another artist in or after 1666.

Blumenbach, 1799, as well as Brandt, 1847, give their own drawings of the Dodo, both based on ancient pictures as well as on the cast of the head in the Oxford Museum. Unfortunately this skull wants the characteristic horn-sheaths, so that their drawings are wrong.

Von Hayek gives, in his *Handbuch der Zoologie*, a figure of a Dodo. In the lower left corner you will observe a fictitious monogram of Roelandt Savery: R and S crossing each other, and under the figure the inscription, "Nach Savery's Bild in Wien."—The one and the other are wrong, for Savery's monogram and his picture in Vienna are quite different, and, moreover, Hayek's figure is for the greater part a copy of Brandt's drawing of 1847, amended by himself in the wing, the region of the rump and the tail after Edwards's reproduction of the picture of Roelandt Savery in the British Museum!

As to the Common Dodo (*Raphus cucullatus* L.) the males and females differ widely in colour and in ornaments. The males are light bluish-grey with a plume-like tail, which gradually passes into a rich dress in the region of the sub-caudal coverts and circumanal feathers. The females are blackish-brown, with a brown breast and an almost globular tail like that of the Ostrich.

In the nuptial dress the Dodos remained from March to September, and in this period they were extremely fat; on the other hand, from September up to March they had a more erect carriage, as is represented on the gable-stone—meagre, long-legged, with outstretched neck.

The figure of Clusius (1605) shows the bird during its moult. Between these three states we find, of course, portrayed all kinds of intermediate stages. I have at present in my collection 85 reproductions taken from 38 originals, showing these stages.

The high degree of corpulency caused a temporary paralysis of the muscles which held up the wings; therefore we find invariably on all the drawings, representing the Dodo in its fat period, the wings hanging down; on the contrary, the Dodos in the meagre period hold their wing firmly pressed against the body, with the remiges directed backward. In the fat period the tail-vertebræ are turned up towards the head, so that the ball of tail-plumes seemed to lay on the bird's back (the tail-plumes, however, themselves preserved the original direction, *i. e.* backwards).

Relatively the young Dodo has a short bill without transverse ridges; the older the bird, the more ridges and the longer the bill.

How many Dodos reached Europe? At least fifteen, of which nine came to the Netherlands, three to England, probably one to Belgium, and presumably one to Italy.

As is well known, the White Dodo (*Apterornis solitarius* Selys) inhabited the isle of Mascarenhas (Bourbon). In this species, too, I have been able to prove that the males and females differed widely with respect to their colours and ornaments.—In the males the horny sheath of the upper mandible was hooked and sharp; its distal end was black, its proximal half was yellow with transverse black stripes; the rest of the bill was white; the head and neck were reddish brown, abruptly passing into a cream-coloured breast and gradually becoming yellowish further back; a few down-feathers were scattered over the head, and a ball-shaped tail of Ostrich-like feathers gradually passed into the subcaudal coverts and circumanal feathers.

In the females the horn-sheath of the upper mandible was not hooked, but obtuse, sometimes ending in a blunt point, sometimes rounded; it was greyish or light fawn-coloured, the rest of the bill being greyish or greenish; the whole body is cloth-white, with golden wings. The tail consisted of at least six white rectrices, which resembled in shape those of a Silver Pheasant.

After the pairing-time, during the months September to March, both sexes lost their colours and ornaments; they

were then dirty yellowish or dirty white, thin, high-legged, with extended thick neck.

In this case also the high degree of fatness weakened the muscles of the wing, so that they hung down; in the thin period the wings were pressed against the body and the remiges directed backward.

The young White Dodo had a short bill, the older bird a more elongated one.

In the "Museum Boymans" at Rotterdam there is preserved a water-colour sketch by Cornelis Saftleven, representing the head and neck of an adult male White Dodo in breeding-dress. This has enabled me to settle that the Dodo of Goeimare, in the possession of the Duke of Northumberland, is an adult male White Dodo, but already losing its breeding characteristics. And as this Dodo has—according to Richard Owen—the same colours as that of the Oxford picture painted by Jan Savery, so this Dodo is most probably also a male White Dodo.

The White Dodo differs from the Common Dodo also by the long slack remiges. On these grounds I believe the Dodo of Hoefnagel is a young male White Dodo.

In addition to the two drawings of the female White Dodo by Pieter Withoos, which have long been known, I succeeded in discovering two others by Pieter Holsteyn Sr.

The third kind of Dodo is the better known Solitaire of Rodriguez (*Pezophaps solitarius* Gmel.).

I have endeavoured to point out that these three species of Dodo have several characters in common, both external and ethological: they form a peculiar group of the *Columbæ*, or *Columbiformes*, with reptilian characters.

The first volume of this account of my studies on the Dodo has already appeared, and can be obtained from the booksellers; and I am hoping to issue a second volume, for the publication of which I have obtained help from the Teyler Fund at Haarlem. This will contain a number of additional facts and discoveries in regard to these very curious and interesting extinct birds.

Robinson on Malayan Birds.

[On a Collection of Birds from Pulau Langkawi and other islands on the north-west coast of the Malay Peninsula. By Herbert C. Robinson. J. Fed. Malay States Museums, vii. 1917, pp. 129-191.]

These islands, the fauna of which has recently been investigated by Mr. Robinson and his colleague Mr. Seimund, lie off the western coast of the Malay Peninsula to the north of Penang between the parallels of 6° N. and 7° 30' N. The avifauna is characterized by the absence or scarcity of those birds which frequent the forest and which belong to such families as the Timeliidæ or Eurylæmidæ. As the visit took place in the winter months a good many migratory Flycatchers, Thrushes, and Warblers were obtained, as well as many Waders. Altogether examples of 112 species and subspecies were obtained, one of which, a Trogon, is described as new, *Pyrotrogon oreskios uniformis*. An example of the large Stork, *Xenorhynchus asiaticus*, only previously obtained in the Malay Peninsula by Cantor many years ago, was taken. Field-notes and, in many cases, taxonomic discussions accompany the list of species.

Shufeldt on fossil Birds from Florida.

[Fossil Birds found at Vero, Florida: with descriptions of new species. By R. Shufeldt. Ninth Ann. Rep. Florida State Geol. Surv. 1917, pp. 35-42; 2 pls.]

A number of fossil bird-bones found in some beds on the western or Atlantic coast of Florida, of supposed Pleistocene age, have been recently referred to Dr. Shufeldt for examination. Among them is a right humerus on which he founds a new Teal, *Querquedula floridana*, a tibio-tarsus on which he founds *Ardea sellardsi*, sp. n., and a metacarpus which is described as *Larus vero*, sp. n. Other bones are referred to genera or species still living in North America, and all are figured from photographs taken by the author.

Swarth and Bryant on Californian Geese.

[A study of the races of the White-fronted Goose (*Anser albifrons*) occurring in California. By H. S. Swarth and H. C. Bryant. Univ. Cal. Publ. Zool. xvii. 1917, pp. 209-222; pl. 13, 2 text-figs.]

It has been pointed out to Messrs. Swarth and Bryant by Judge Henshaw and other Californian sportsmen that two forms of White-fronted Goose occur in California in winter, a larger and a smaller race.

The authors have examined a considerable number of specimens both in the flesh and in skin, and have satisfied themselves that this is the case. The larger and rather scarcer bird with a wing of 420-475 mm. has a darker head and neck and 18 tail-feathers in the male and 16 in the female, the edge of the eyelid is yellow causing the appearance of a yellow eye-ring.

The smaller and commoner bird, with a wing of 381-422 mm., has a paler head and neck, 16 tail-feathers in both sexes, and the edge of the eyelid greyish brown.

Messrs. Swarth and Bryant believe that the smaller bird is *Anser albifrons albifrons*, the Palearctic form of the White-fronted Goose, and that its breeding-range extends across Behring Straits into western Alaska, and that farther east its place is taken by the larger bird (*A. a. gambeli*), which breeds throughout the rest of Arctic America.

If this is so, and the authors' careful investigations appear to point to this conclusion, the occurrence of *A. a. albifrons* in the New World is an entirely novel fact, but it must be remembered that so far the authors have only been able to examine Californian material, and have had no opportunity of seeing any European or other North American breeding or winter-killed specimens.

Austral Avian Record.

[The Austral Avian Record. Vol. iii, nos. 1-5. June 1915-Dec. 1917.]

Since the outbreak of the war Mr. G. M. Mathews's journal has not appeared so frequently, but we have received

five numbers since we last noticed it, and we will briefly summarize their contents. The first article by the editor is accompanied by an exact reproduction of the Watling drawing, made in 1790, on which Latham founded his *Columba pallida*. This was identified by Gould with the Cuckoo since generally known as *Cacomantis pallida*, and, though doubts have been cast on this identification since by Hartert and Sharpe, Mr. Mathews believes that Gould's original identification is correct and must be accepted. Another Watling drawing is also reproduced on which Latham founded his *Certhia atricapilla*. This bird, obviously a Honey-eater, is called *Melithreptus atricapillus* in Mr. Mathews's last List. The synonymy and identification are here discussed.

Of bibliographical papers one is by Messrs. Mathew and Iredale on Levrault's 'Dictionnaire des Science Naturelles,' published between 1816 and 1830 at Paris. The articles on birds were by C. Dumont, and according to Messrs. Mathew and Iredale recognition of the names used by him involves several changes in current literature. Another paper of similar nature by the same authors deals with Boddaert's 'Tables des Planches Enluminées.'

Among some drawings now in the possession of Mr. Godman, made by a Mr. George Raper at the end of the eighteenth century on Lord Howe Island, is one of a now extinct and undescribed Fruit-Pigeon, believed by Mr. Mathews to be distantly allied to the New Caledonian *Phœnorhina*. He proposes to call it *Raperia godmanæ*, after the artist and Mrs. Godman.

In the fourth number are some biographical details of Silvester Diggles, a good naturalist and observer who lived in Queensland from 1854 to his death in 1880. He published a work called 'Ornithology of Australia' in parts between 1866 and 1870. Of this Mr. Mathews gives a bibliographical account, and the article is accompanied by a portrait of Diggles himself.

Some confusion has been caused by Latham's assertion that his Sea-Eagle, which is undoubtedly *Haliaëtus albicilla*,

a species confined to the northern hemisphere, was met with at Botany Island by Capt. Cook, as evidenced by one of the Watling drawings. This Botany Island has been supposed by both Sharpe and Mathews to be an island in Botany Bay, New South Wales. In a note in the fifth number of this journal M. Brasil points out that the Botany Island is undoubtedly a small islet off the southern coast of New Caledonia where Capt. Cook landed from the 'Resolution,' and where one of his officers shot a bird called by Capt. Cook *Falco haliaëtus*. The bird was undoubtedly an Osprey, one of the forms of *Pandion haliaëtus* and not the Sea-Eagle.

Several portions of the "Additions and Corrections to the 1913 List of Australian Birds" are scattered through the five numbers here noticed. These contain descriptions, or perhaps one might say indications, of many new genera and subspecies; finally, two good coloured plates of *Nesomalurus leucopterus* and *Diaphorillas carteri* illustrate an article on these two long-lost birds recently re-discovered by Mr. Tom Carter on Dirk Hartog Island in Western Australia (see also Ibis, 1917, pp. 593, 599).

Bird Notes.

[Bird Notes. The Journal of the Foreign Bird Club. Edited by Wesley T. Page. Vol. viii. nos. 1-12. Jan.-Dec. 1917.]

The last volume of 'Bird Notes,' chiefly through the energy of the editor, Mr. Wesley Page, seems to retain the full vigour of pre-war days, though we notice the absence of any coloured plates in the present issue. This is compensated to a great extent by, may we say, the discovery of a new bird-artist, Mrs. B. M. Cooke, who has illustrated several of the articles with some very charming and characteristic pictures, which are reproduced in black and white. Mrs. Cooke, who is a member of the Bird Club and no doubt herself an aviculturist, has provided these drawings without charge to the magazine. We are specially fascinated by her four sketches of Cuvier's

Toucan, illustrating an article on these birds by the Editor and Mrs. C. F. Leach.

It is difficult to understand how aviculturists have managed to keep their aviaries full in these trying times, but Mr. Page appears to have been able to arrange for the private importation of a number of Indian birds consigned to him by Mr. E. W. Harper, and a series of articles deals with those species which have already reached this country and have been distributed among members of the Foreign Bird Club and the Avicultural Society.

The indefatigable Dr. Hopkinson has commenced a series of articles on the African Whydahs with their English and scientific synonymy and their avicultural history, which will no doubt be of the greatest assistance to those who keep living examples of these attractive birds.

Mr. H. Whitley writes on his success in getting the Sulphur-crested Cockatoo (*Cacatua galerita*) to breed for the first time in this country "in a state of controlled liberty," and has been awarded the Club's medal.

There are many other articles of interest to members of the Club from the pens of Miss Chaloner, the Marquis of Tavistock, Mr. W. Shore Baily, Mr. H. E. Bright, and the Editor; while Lient. F. Dawson-Smith and Dr. N. S. Lucas send accounts of their experiences of bird-life at the western front.

Finally, we regret to see the announcement of the death of Lt.-Col. G. A. Perreau, a frequent contributor to the pages of this journal as well as to the 'Avicultural Magazine.' He was killed in action during the attack on Bagdad in March 1917.

The Condor.

[The Condor. A Magazine of Western Ornithology. Vol. xix. for 1917; 6 nos.]

The present volume of the 'Condor' is devoted almost entirely to the bird-life of western America, but it contains a number of articles that should interest and instruct even those of us who dwell elsewhere.

Mr. Hanna, who has for some time past devoted himself to the elucidation of the nesting-habits of the White-throated Swift (*Aëronautes melanoleucus*), believes that under certain circumstances this species, which is supposed to go south in winter, hibernates in the crevices of the cliffs where it nests. He gives certain evidence to support his statement, which, if proved, is of great interest, as it revives a belief widely held in former days even in regard to the Swallow in England.

The effects of a great hurricane which devastated Corpus Christi, a town on the coast of the Gulf of Mexico, is related by Mr. R. A. Sell. It chiefly affected the Pelicans and Purple Gallinules, which were destroyed in hundreds.

Mr. Oberholser contributes a review of the Blue Jays of the genus *Aphelocoma*, and solves a problem which has long puzzled taxonomists. Two forms of the group, *A. cyanotis* and *A. texana*, were supposed to occur side by side in Texas. This Mr. Oberholser shows is not the case, and the individuals supposed to be referable to the first-named species are in reality the latter in fresh plumage. In another contribution the same writer describes a new subspecies of the Yellow-throated Warbler, *Geothlypis beldingi goldmani*, from the central part of the peninsula of Lower California. It differs from the typical form found in the extreme south of the same peninsula in its much paler coloration.

One of the earliest scientific travellers to visit California was the Italian Dr. P. E. Botta (1802-1870), who spent a year in the State in 1827 and 1828. Mr. T. S. Palmer gives some account of this naturalist and archaeologist. Some of the birds he obtained were afterwards described by Lesson, while his name is commemorated in *Saxicola bottæ*, which was named after him by Bonaparte, but which came from Abyssinia, not California.

The Osprey (*Pandion haliaëtus carolinensis*) is far from uncommon in the Yellowstone Park, and Mr. M. P. Skinner, who estimates that about a hundred and twenty pairs bred there regularly, gives a very fine photograph of a pinnacle rock, on the summit of which a pair of these birds have

their nest. They arrive from the south in April, and some interesting details of their life-history are given in a short paper accompanying the photograph. In another article he describes the White Pelicans which also breed in the Yellowstone, but in this case the nests are found together with those of the California Gull (*Larus californicus*) on two small flat islands at the southern end of Yellowstone Lake.

Other articles of interest in the present volume are by Mrs. Bailey on the birds of the humid coast region of Oregon, by Mr. H. J. Rust on the birds of Idaho, by Messrs. H. E. Hansen and W. A. Squires on the birds of San Francisco country, where great changes have taken place owing to the growth of the city of San Francisco, which now numbers half a million people.

Mention of several more papers which have been received as "separates" have already been made in previous numbers of 'The Ibis.'

Irish Naturalist.

[The Irish Naturalist. Vol. xxvi. nos. 1-12, 1917.]

The 'Irish Naturalist' for last year contains comparatively few articles of interest to ornithologists. There seems to be a lack of Irish naturalists interested in birds, and a somewhat sarcastic essay by Mr. R. Southern on "The State of Ireland" seems to confirm this.

Turning now gratefully to what there is of interest to bird-lovers in the pages of our contemporary, we have a good article by Mr. C. B. Moffat on the effect of the cold winter of 1916-17, and especially of a great snowstorm on 26 January, 1917, on bird-life in Wexford. This storm appears to have fallen most heavily on a diagonal belt across Ireland from north-west to south-east from Co. Mayo to Co. Waterford, and in Co. Wexford the depth of snow was over fifteen inches. Mr. Moffat believes that so far as his county was concerned the Stonechat, Gold-crested Wren, Long-tailed Tit, Grey Wagtail, and Meadow-Pipit were exterminated, while the Song-Thrush was much reduced in

numbers. On the other hand the Irish Dipper, the Irish Coal-Tit, and the Irish Jay, all indigenous forms, appear to have hardly suffered at all.

A complementary account of the effects of the winter in Co. Down is given by Mr. N. H. Foster in the succeeding number. Here the winter though severe was not exceptionally so, and extermination was not so noticeable, though there was a great scarcity of Fieldfares; the Stonechat, Gold-crest and Long-tailed Tit also suffered severely, but not the Grey Wagtail and the Meadow-Pipit. It would be interesting to compare these observations with those brought together at a recent meeting of the B. O. C. (Bull. B. O. C. xxxviii. p. 20).

A second paper by Mr. Foster deals with the sizes and weights of birds' eggs, the latter of the shells when blown.

A short article by Mr. Moffat deals with the arrival dates of some Irish migrants and discusses the question whether the forward or backward condition of the spring affects these dates; and Mr. J. P. Burkitt has some field-notes on the nesting and other habits of the Long eared Owl which seem to bring out some novel points.

A number of short notices by Prof. C. J. Patten and others on occurrences of rare birds at lighthouses and elsewhere are of some interest, though nothing very novel appears to have transpired during 1917.

Revue Française d'Ornithologie.

[Revue Française d'Ornithologie, scientifique et pratique. 9 Année; Nos. 93-104. Jan.-Dec. 1917.]

The French Ornithological Journal, under the able guidance of M. Menegaux, deals with ornithology, not only in its scientific, but also from a popular and economic aspect. From the latter point of view, we find an article in the present volume by M. Ch. Rivière dealing with the domestication and farming of the Ostrich in Madagascar, while the Editor himself puts in a plea for either Kerguelen or the Crozet Islands, both of which groups are in the

Indian Ocean and under French protection, to be made a national preserve and park for Antarctic bird-life.

M. Menegaux also writes on a collection of birds made by M. Mocquerys in the Brazilian State of Matto Grosso consisting of representatives of 85 species, and Drs. Bouet and Millet-Horsin conclude their account of the birds of the Ivory coast of French West Africa.

In a little note on p. 64 will be found an important "ringing result." An example of *Diomedea chionopectera*, ringed 21 December, 1913, by M. Loranchet at Kerguelen, was captured by Captain Libouban of the sailing-ship 'A. D. Bordes' on 19 December, 1916, off Cape Horn, proving that sometimes at least Albatrosses traverse immense distances. From Kerguelen to Cape Horn must be at least 8000 miles.

M. Coursimault completes his enumeration of the singing-birds of Vendome with their notes reduced to a musical scale, which has been running through several volumes; M. R. Deschiens sends a contribution to the study of the local distribution of shore and coast birds, grouping them according to their habits of life; M. E. Anfrie has prepared a list of colour-variations and abnormal specimens among the examples preserved in his large collection; and, finally, M. Brasil corrects a former statement of his in regard to the generic name of the Madagascar Sun-Bittern which he formerly believed to be *Mesites* Isid. Geoffr. St. Hil., April 1838. It has now been pointed out to him by Dr. F. A. Bather that this name is preoccupied by *Mesites* Schönherr, January 1838, proposed for a genus of Weevils, and that the correct generic name for the Sun-Bittern is *Mesœnas* Reichenbach 1850.

The Scottish Naturalist.

[The Scottish Naturalist. A Monthly Magazine devoted to Zoology. Vol. for 1917; 12 numbers.]

The principal contributors in ornithology to the 'Scottish Naturalist' of the past year are undoubtedly the Misses Baxter and Rintoul. The whole of the July-August

number, consisting of over 50 pages, is devoted to their "Report on Scottish Ornithology in 1916." It follows the lines of previous reports, which have now been issued since 1913, and is a most useful and business-like compilation. Notwithstanding the difficulties of travel and of access to particular areas, a large number of observations have been made and sent in to the authors. No actually new birds are recorded for Scotland, but a female Pied Wheatear, *Ænanthe leucomela* of the B. O. U. list, was taken on Swona, Orkney, the second record for the British Isles; while an example of the Siberian Chiffchaff, *Phylloscopus tristis*, hardly known beyond the Orkneys and Shetland, was taken at the Little Ross Lighthouse, Kirkcudbrightshire, on December 3. It had never previously been noticed so far south. Other sections of this report deal with ringing results, plumage-variations, breeding and migration notes; these last include a monthly calendar of weather and movements, and another section where the species are treated of individually.

Another article by the same ladies deals with the autumn display of various British birds. Much has been written on spring display and courting, but little is recorded about these habits at other times of the year. Misses Rintoul and Baxter have noticed that Ducks seem much given to autumnal antics, and have noticed the same in the case of the Missel-Thrush and Meadow-Pipit. Another question discussed by Misses Rintoul and Baxter is that of the pale and dark-breasted forms of the Brent Goose which occur in Scotland in winter. Are they two races or subspecies, or are they dimorphic forms of the same race? Contributions to this discussion from Mr. Abel Chapman, Mr. Wm. Evans, and Mr. J. G. Millais are given; and while Mr. Chapman states that both forms are found in mixed packs in winter, Mr. Millais states that the dark and light-breasted forms occur separately and in different localities, and are not found in the same flock. There can be little doubt that the pale-breasted form, at one time supposed to be exclusively American in origin, breeds in Spitzbergen and

Kolguev alongside the darker-breasted form, and we feel that the relationship of the two forms to each other and to the supposed American Brent are still by no means clear.

Mr. Eagle Clarke writes an interesting account of the wild life in the deer-forest of Corroar in western Inverness-shire, where he has spent several summers. The forest consists of 2700 acres, and has ten mountain-summits within its borders. Mr. Clarke defines the life-zones as alpine at 2000 to 3000 feet, and subalpine between the 2000 and 1000 feet contour-lines, with large lakes and much woodland, and a valley zone below 1000 feet. The characteristic birds and mammals of each are described; those of the alpine zone are the Golden Eagle, Raven, Ptarmigan, and Golden Plover.

From Mr. W. Berry we have an eloquent plea for a chair of economic ornithology at one of our Universities, and from Mr. H. Boase a detailed account of the life-history of the Coot as observed in Perthshire.

Yearbook of the Dutch Bird-Club.

[Club van Nederlandsche Vogelkundigen. Jaarbericht, no. 7, pp. 1-103. Deventer (Kluwer), 1917.]

The frontispiece of this year's report is a portrait of Hermanus Hendricus ter Meer (1838-1917), who was for many years the chief taxidermist of the Leyden Museum. His father and grandfather occupied the same post, and his son was also for some time employed in the Museum. The Editor and President of the Club, Baron Snouckaert van Schauburg, contributes his annual report on Dutch Ornithology in 1916-17, but there does not seem to have been many occurrences of special interest. He also writes on several changes in the names of Dutch birds which seem to be inevitable; on the distribution of a Glossy Starling (*Coccycolius iris*) of West Africa and of the distribution and races of the Yellow Wagtail.

Mr. W. C. van Heurn writes a comparative account of bird-life in the Dutch tropical colonies with reference to Surinam in the west and Sumatra and Java in the

cast; and, finally, there are some good photographs from the life reproduced, especially one of an Arctic Tern flying down to her nest containing two eggs, taken by Mr. T. van Schilfgaarde on the island of Rottum off the extreme northern part of the Dutch coast.

List of other Ornithological Publications received.

- CLARKE, W. E. Wild life in a West Highland Deer Forest. (Scottish Nat., Nov., Dec. 1917, and Jan. 1918.)
- DESPOTT, G. Ornithological Notes for the Maltese Islands. (Jan.-June, 1917.)
- GRINNELL, J. The Status of the White-winged Petrels of the California Coast. (Condor, 1918, p. 46.)
- GRINNELL, J. The Niche-relationships of the California Thrasher. (Auk, 1917, pp. 427-433.)
- LEWIS, J. C. Some considerations on Sight in Birds. (Smithsonian Report, 1916, pp. 337-345.)
- MATHEWS, G. M. The Birds of Australia. (Vol. vii. pt. 1. London, 1918.)
- SWARTH, H. S. Notes on some Birds from Central Arizona. (Condor, 1918, pp. 20-24.)
- SWARTH, H. S. The Pacific Coast Jays of the Genus *Aphelocoma*. (Univ. Cal. Publ. Zool. vol. xvii. pp. 405-422.)
- THEOBALD, F. V., and MCGOWAN, W. Reports on the Food of the Rook, Starling, and Chaffinch. (Suppl. Journal Board Agriculture. London, May 1916.)
- THORBURN, A. British Birds; Supplementary Part, with 2 Plates in colour. (London, 1918.)
- WHITE, Capt. S. A. In the Far North-east: a Scientific Expedition. (Adelaide, 1917.)
- Auk. (Vol. xxxv. No. 1, 1918.)
- Avicultural Magazine. (Third Series, Vol. ix. Nos. 3-5, 1918.)
- Bird-Lore. (Vol. xix. No. 6, 1917; Vol. xx. No. 1, 1918.)
- Bird Notes. (Third Series, Vol. i. Nos. 1-3, 1918.)
- British Birds. (Vol. xi. Nos. 8-10, 1918.)
- Condor. (Vol. xx. No. 1, 1918.)
- Emu. (Vol. xvii. pt. 2, 1917.)
- El Hornero. (Vol. i. No. 1, 1917.)
- Irish Naturalist. (Vol. xxvii. Nos. 1-3, 1918.)
- Revue Française d'Ornithologie. (Nos. 105-7, 1918.)
- Scottish Naturalist. (Nos. 73-75, 1918.)
- South Australian Ornithologist. (Vol. iii. No. 4, 1917.)

XIX.—Letters, Extracts, and Notes.

Modern methods in Nomenclature.

SIR,—Having been a member of the British Ornithologists' Union for fifty years—elected in 1868—I have lived long enough to see many changes in men and manners, and, I regret to say, long enough to see a departure from the methods of studying Ornithology, which I much deplore. For some time past I have felt much dissatisfied with the affairs of the Union, and avail myself of the present opportunity to state my reasons.

(1) I do not like the way in which the Journal is conducted on lines at variance with opinions expressed in 'The Ibis List of Birds,' 1915. That volume of 430 pages cost a great deal of money, and was intended to bring about greater uniformity in nomenclature. In this direction it has not succeeded. Neither the Editor nor the contributors to 'The Ibis' seem to be bound by it, and names recommended for use are disregarded. To give an example. In a review of Dr. Shufeldt's paper "On the Osteology and Systematic Position of the *Pygopodes*" (Ibis, 1904, p. 658), Professor Newton wrote:—

"We agree with Dr. Shufeldt that American Ornithologists have made a great disturbance of nomenclature in transposing the name *Colymbus* from the Divers to the Grebes. Moreover, we consider that the change, like many others proposed, is quite unjustifiable."

In spite of this authoritative opinion, in which I entirely concur, Dr. Hartert and his co-editors, in their 'Hand-list of Birds,' 1912, persist in the transposition of these two generic names.

The Committee of the B. O. U., in the Appendix to the new 'List of British Birds,' 1913, properly pointed out (p. 399) that Latham in 1787 very definitely adopted Linnaeus's genus *Colymbus* for the Divers, and proposed *Podiceps* (rectius *Podicipes*) for the Grebes, and concluded by expressing the hope "that the Check-list Committee of

the American Ornithologists' Union will see their way to return to the older and as they believe to the correct usage of the genus *Colymbus* in the near future."

My point is that, notwithstanding this expression of opinion, the Editor of 'The Ibis' has allowed contributors to adopt the objectionable transposition complained of. Other equally indefensible changes have been attempted in the 'Hand-list of Birds,' notably the transposition of the scientific names of the Song-Thrush and Redwing; but fortunately in this case the Committee of the B. O. U. have very properly condemned it. Would that they had displayed equal courage in resisting other innovations.

(2) I very much object to the constant changes of names that are made on the score of priority, and in defiance of the strongly-worded protest that was made by leading zoologists, on the initiative of Dr. Boulenger, at a meeting of the Zoological Society in 1908. I was not present at that meeting or I should certainly have signed the protest referred to, having been long convinced of the confusion and inconvenience which have been caused by the reckless changes complained of.

(3) I deplore also the amount of time expended, and valuable space wasted in describing so-called "subspecies," based either on individual variation or on the most trivial differences, which are wholly insufficient to entitle them to recognition.

If any particular bird can be shown to be specifically distinct from another to which it is evidently nearly related, by all means give it a specific name with a recognisable description; but if it differs only in such trivial particulars as mere *shade* of colour, slight difference in size, or infinitesimal variation in length of bill or wing, such variations can surely be pointed out in a few words without burdening the list of species with new names. This practice therefore should be discouraged by the Committee, and discontinued in 'The Ibis' at all events. For it is not only of no practical value, but the results are most embarrassing and irritating to readers when descriptions of new subspecies

are unaccompanied (as is generally the case) by any information concerning the haunts, habits, nesting, etc., of the newly-named "forms."

To insist upon the acceptance of such views as I condemn is to knock all the life out of the study of ornithology, and to encourage a younger generation to pay more attention to rule and compass than to the more fascinating and more useful study of the living birds and their geographical distribution.

(4) I object further to the bestowal of new names on old and well-known species on the pretext of their being "British forms" or "Continental forms," regardless of the fact that most of them are regular migrants to and from Europe, and therefore may be one day "British" and the next day "Continental."

(5) I take up a number of 'The Ibis' and find birds that I have known all my life—or, say, for fifty years—referred to by new and strange names, some of which I never heard before, and which are not to be found in the 'Index Generum Avium,' so carefully prepared by Mr. F. H. Waterhouse, e. g. *Ixobrychus* for the Little Bittern. The worst of it is that these new names get adopted by those of a younger generation who think they ought to follow the latest fashion; they appear in print, and before they have been long published some clever grave-digger disinters still older names for which priority is claimed, and the newly-proposed ones have to be relegated to the already overburdened list of synonyms.

(6) But the practice to which I take the greatest exception, on the score of the inconvenience and confusion which it causes, is that of quoting the 10th edition of Linnæus's 'Systema' (1758) instead of the 12th (1766), which was the last revised by him and published in his life-time. This is a direct violation of the Code of Rules for Zoological Nomenclature drawn up by a Select Committee of the British Association in 1842, reprinted in 1863, and again in 1878, and therefore entitled to "priority." This infringement of principle introduced by American ornithologists

should never have been countenanced by the British Ornithologists' Union, still less adopted as it has been. It is incontestable that it has caused the greatest confusion by the alteration of names which have been current in our literature for upwards of a century, and have become as familiar as "household words." It results, moreover, in a manifest injustice to Linnæus himself, who is thereby made responsible not only for typographical errors, but also for names in the tenth edition of his great work which he corrected in the twelfth, the last published in his lifetime. To give but one instance of such injustice. In his tenth edition Linnæus named the Golden Oriole *Coracias oriolus*, but subsequently in the twelfth edition, having discovered his mistake in regard to the genus to which he assigned it, he altered the generic name to *Oriolus*, and bestowed the specific name *galbula*, and as *Oriolus galbula* this name has stood in all the textbooks from that time to the present day. Why then alter it to *Oriolus oriolus* in face of the statement by the Committee of the B. O. U. that "Linnæus almost invariably avoided using the same name in the generic and specific sense." The word "almost" I think might be deleted, for I can recall but one instance in which he involuntarily did so. That was in the case of a fish (the mackerel), which, by a printer's error, was at first named *Scomber scomber*; but as I pointed out twenty odd years ago (*Zoologist*, 1894, p. 471), Linnæus corrected this in his own handwriting to *Scomber scombrus* (a substantive in apposition), thus removing all ground for establishing a precedent. Yet, nowadays the new school of faddists, not content with repeating the generic name for what they call the type-species, must needs repeat it a third time to indicate a "subspecies," and so we are expected to adopt such ridiculous combinations as *Oriolus oriolus oriolus* and *Pica pica pica* (as one might call to a dog), or worse still *Coccothraustes coccothraustes coccothruustes*, well-nigh unpronounceable. All this verbiage should be swept away, and a return made to the simplicity of the binomial system of Linnæus, in accordance with the views of the practical naturalists who

seventy-five years ago established the Rules for Zoological Nomenclature that were subsequently accepted by the founders of 'The Ibis.' The latter never could have foreseen such vagaries as have arisen at the present day. I would go further, and say that, since experience has shown that nothing but confusion has resulted from the use of the 10th edition of Linnæus, we are never likely to attain uniformity in nomenclature until we return to the use of the 12th edition as revised by the author; and the longer we delay the correction of the mistake that has been made, the greater will be the confusion bequeathed to posterity.

Your obedient servant,

Weybridge,
March, 1918.

JAMES EDMUND HARTING.

**Annual General Meeting of the British Ornithologists'
Union.**

The Annual General Meeting of the B. O. U. for 1918 was held on 13 March at the Offices of the Zoological Society of London, Col. R. G. Wardlaw-Ramsay, the President, in the Chair. There were fifty-four Members present.

The Minutes of the last Annual General Meeting were read and confirmed.

The Statement of Accounts for the year 1917, which had been circulated, were submitted and passed.

The Annual Report of the Committee was read as follows:—

“The Committee have much pleasure in being able to report that during the year 1917 the deficit of £40 on the 1st January has been turned into a credit balance of £204 15s. 5d. The accounts for the past year, which have been kindly audited by Mr. H. Munt, show what we trust will be deemed a satisfactory result. The total receipts in 1917 have been £851 15s. 6d. as compared with £941 17s. 1d. in the previous year, the decrease being due to the smaller number of the Jubilee Supplement and the List of British Birds sold. The total payments have been £615 6s. 7d.

as against £938 9s. 4d. in 1916, but we have in the present year £45 2s. 6d. outstanding on account of plates. The decrease in the payments is due chiefly to the fact that we have not had to pay for extra publications, such as the Jubilee Supplement, the List of British Birds, and the General Index (1895–1912), for which we had to pay in 1916.

“The cost of ‘The Ibis’ has been £523 6s. 6d. as against £465 1s. 11d. in the previous year. The present volume, which is the fifty-ninth, and the fifth of the Tenth Series, contains 670 pages, and is illustrated with seven coloured and four uncoloured plates and four text-figures. The reason for the increased cost is due to a rise in cost of printing, binding, reproducing plates, and indeed every item connected with the production of ‘The Ibis.’

“It is satisfactory to note that in spite of present circumstances the sales of ‘The Ibis’ and other publications have been well maintained.

“With regret the Committee report the deaths of the following Members since the last Annual General Meeting:—C. J. Alexander, G. H. Dawson, Prof. Dr. Otto Finsch, Prof. Dr. Emil Goeldi, J. R. Hatfield, Sir H. J. Johnson, Prof. G. Martorelli, Colonel E. S. Mason, A. J. North, F. M. Ogilvie, Godfrey V. Webster.

“The following gentlemen have resigned:—J. P. Chaworth Musters, F. P. Johnson.

“The membership of the Union, and comparison with the previous five years, is as follows:—

		1918.	1917.	1916.	1915.	1914.	1913.
Ordinary	Members ...	423	416	420	441	433	425
Extraordinary	„ ...	1	1	1	1	1	2
Honorary	„ ...	8	9	9	9	7	8
Hon. Lady	„ ...	8	9	8	6	6	6
Colonial	„ ...	9	10	10	10	9	9
Foreign	„ ...	19	19	19	20	19	20

“There are 16 candidates for Ordinary Membership, 1 for Honorary Membership, 1 for Foreign Membership, and 1 for Colonial Membership.”

Prior to the Committee's recommendation in regard to the appointment of a President being read, Dr. Forbes objected to the nomination as invalid owing to Rule 11, which requires six weeks' notice to be given, not having been complied with. The Honorary Secretary having explained the reason for this,

The Chairman moved that Standing Orders be suspended with a view to take the opinion of the meeting as to whether the election of a President should be proceeded with. This was seconded by Colonel Rattray. Dr. H. O. Forbes objected and was supported by Mr. Abel Chapman. The motion was carried by twenty-nine to six, many Members not voting.

The Committee's recommendation "that Dr. W. Eagle Clarke, LL.D., F.L.S., F.R.S.E., be elected President in the place of Colonel R. Wardlaw-Ramsay, who retires on the expiry of the fifth year of his Presidentship," was then read. Colonel Fielden, who had proposed Mr. H. M. Upcher for President, then proceeded to read a letter from that gentleman in which he stated that under no circumstances would he allow his name to be put forward in a contested election. Colonel Fielden therefore withdrew his nomination. Mr. Trevor-Battye spoke to the same effect. The recommendation of the Committee was then put to the meeting and carried by forty-nine votes to one.

Mr. G. M. Mathews was elected a Member of the Committee, in place of Mr. D. Seth-Smith who retires by seniority.

Messrs. H. M. Wallis and C. E. Pearson were appointed Scrutineers to superintend the Ballot.

The following sixteen candidates for Ordinary Membership were then balloted for and elected:—Arthur Astley, Captain Arthur William Boyd, M.C., Patrick Arthur Chubb, Frederick Grant, Edward Grevile Herbert, R.F.C., Charles Malcolm Inglis, Harry Raymond Munt, William Rowan, Major A. G. L. Sladen, R.E., Major C. W. Smeed, R.F.A., Thomas Smith, Arthur Lloyd Sturge, G. de Horne Vaizey,

K. G. R. Vaizey, A. H. Walker, M.D. L.R.C.P., M.R.C.S.,
Captain J. A. C. Whitaker.

Mr. Harry Church Oberholser, a Foreign Member, was elected an Honorary Member; Captain S. A. White, an Ordinary Member, was elected a Colonial Member; and Mr. Nagmachi Kuroda was elected a Foreign Member of the Union.

The President announced that the Committee recommended that the names of all members of enemy nationality should be removed from the published lists of the Union for the duration of the war. After some discussion the resolution was passed in an amended form as proposed by Mr. R. W. Chase and seconded by Mr. H. B. Booth as follows:—"That the names of all Honorary, Ordinary, and other Members of enemy nationality be omitted from the published lists of the Union and that they be removed from the Society, provided that if re-elected at the expiration of the war, they be not called upon to pay an entrance fee."

Copies of some correspondence which had taken place between Dr. H. O. Forbes and certain Members of the Committee were laid on the table for the perusal of the Members. Arising out of this, Dr. Forbes asked for a Select Committee to be appointed to consider this correspondence, to which the Committee had taken great exception on account of the intemperate language used by Dr. Forbes.

The Chairman explained the attitude of the Committee and suggested as alternative action to be taken, (1) The appointment of a Select Committee, or (2) The calling of a Special General Meeting at some future date to consider the matter.

Colonel Rattray and some others having pointed out the great inconvenience that would be caused to Members by calling another General Meeting, and having expressed a strong wish that the matter should be finally settled forthwith, moved a proposal to that effect, which was seconded by Mr. Bunyard. This was almost unanimously approved.

Dr. Forbes then spoke in defence of his conduct, having accepted the decision of the Meeting to hear and adjudicate on his case. He was prepared to withdraw only one of the expressions to which exception had been taken. The Chairman then said that the Committee considered that the whole tone of Dr. Forbes's letters was grossly insulting and that no self-respecting Committee could possibly rest satisfied with the partial apology offered by Dr. Forbes.

Mr. D. A. Bannerman then moved and Mr. C. B. Rickett seconded the following motion :—

“That after consideration of the correspondence between Dr. H. O. Forbes and certain Members of the Committee, this Meeting is of opinion that the conduct of Dr. Forbes has been most improper and unworthy of a Member of the Union, and calls upon him to offer an ample apology and to withdraw his letters or to resign his Membership of the British Ornithologists' Union.”

No Amendment being proposed, this Motion was put to the Meeting and carried, with three dissentients only.

With regard to two further motions of Dr. Forbes, having for their object changes in Rule VII. and Rule XIV. of the Union, the first was negatived and the second withdrawn.

Mr. D. Seth-Smith proposed and Mr. Chase seconded a vote of thanks to the Auditor, Mr. H. Munt. This was duly carried.

Mr. Selater proposed a vote of thanks to the Zoological Society for the use of their offices and rooms during the past year. This was carried unanimously.

Mr. Gladstone proposed and Mr. Elwes seconded a vote of thanks to the Chairman, which was carried.

Erratum.

In Mr. T. Carter's paper, 'Ibis,' 1917, pp. 564 611 :—

p. 573, first line, *for* 1877 *read* 1887.

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WILLIAM LUTLEY SCLATER, M.A.



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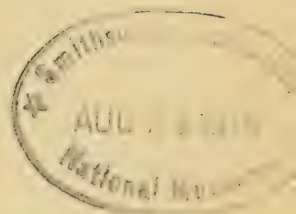
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XX.—*Remarks on the Hawks of the Genus Micrastur.*
By W. L. SCLATER, M.A., M.B.O.U.

(Plate VIII.)

RECENTLY, while recataloguing and rearranging the Accipitrine Birds in the Natural History Museum, I found a hitherto undescribed species of the genus *Micrastur* which was briefly characterized at a meeting of the B. O. C. in March last (Bull. B. O. C. xxxviii. 1918, p. 44). As the birds of this genus are not very well known and have not had much attention in literature of late years, I am now offering a few further remarks on the genus to accompany the coloured plate of the new form prepared by Mr. Grönvold.

Genus MICRASTUR.

Micrastur Gray, List Gen. Birds, 1841, p. 6.

Type, *Falco brachypterus* Temm., = *M. melanoleucus* (Vieill.).

A good discussion of the characters of the genus is given by Ridgway (Proc. Acad. Philad. 1875, p. 476).

The following key shows briefly the distinctions between the various species and subspecies in adult dress :—

- a. Larger; below uniform, unbarred.
 - a'. With a white collar on the nape *M. melanoleucus.*
 - b'. Without a white collar on the nape *M. mirandollei.*
- b. Smaller; under parts with transverse barring.
 - c'. Tail shorter; only one transverse white bar visible on the tail *M. plumbeus.*
 - d'. Tail longer; two or more transverse white bars visible.
 - c². Throat and chest rich rufous or, at any rate, traces of a rufous wash on the chest; barring becoming lighter towards the tail-coverts *M. ruficollis.*
 - d². Only the throat rufous-brown; black barring continuing heavy to the tail-coverts . *M. zonothorax.*
 - e². Throat and chest not washed with rufous.
 - f³. Barring of abdomen heavy throughout; back rufous or slightly washed with rufous *M. gilvicollis.*
 - g³. Barring becoming fainter or even obsolete towards the under tail-coverts; back plumbeous *M. guerilla.*

The four last-named forms appear to me to constitute a compact geographical group, and I have therefore treated them as subspecies.

Micrastur melanoleucus.

Sparvius melanoleucus Vieillot, N. Dict. d'Hist. Nat. x. 1817, p. 327 : Paraguay [ex Azara].

Falco leucomelas Licht. Verz. Doubl. 1823, p. 62 : Paraguay [ex Azara].

Falco brachypterus Temm. Pl. Col. livr. 26, 1824, pl. 116 (juv.), pl. 141 (adult) : Brazil, Guiana, and Paraguay.

Carnifex naso Lesson, Rev. Zool. 1842, p. 379 : South America.

Falco percontator Cabot, Boston Journ. N. H. iv. 1844, p. 462 : Yucatan.

Micrastur amaurus Gurney, Ibis, 1879, p. 173 : Panama [founded on a melanistic variation].

The name used in the Catalogue, *Sparvius semitorquatus* Vieill. (N. Diet. d'Hist. Nat. x. 1917, p. 322), as was first shown by Ridgway (Proc. Acad. Philad. 1875, p. 484), cannot be used for this species as the description is in no way applicable.

Hellmayr (Rev. Spix'schen Typen, p. 570) also rejected Vieillot's *S. melanoleucus* on the ground that another bird had been previously described under the same name on p. 319 of the same work; but this latter was not a new description, but merely a citation of Latham's *Falco melanoleucus*, and does not appear to invalidate the subsequent description of the new form.

Distribution. From the State of Sinaloa in Mexico southwards to Ecuador, but not farther south in the Andes, and to the Prov. Salta in northern Argentina and Paraguay, including Brazil and the Guianas.

Micrastur mirandollei.

Astur mirandollei Schlegel, Nederl. Tijdschr. i. 1863, p. 130: Dutch Guiana.

Micrastur microrhynchus Pelzeln, Novara Reise Vög. 1865, p. 11: Para State, Brazil.

Distribution. Costa Rica south to the basin of the Amazon and Guiana.

Micrastur ruficollis ruficollis.

Sparvius ruficollis Vieillot, N. Diet. d'Hist. Nat. x. 1817, p. 322: South America [Rio Janeiro, apud Berlepsch & Hartert, Nov. Zool. xv. 1898, p. 290].

Falco leucauchen Temm. Pl. Col. livr. 52, 1824, pl. 306: Brazil [founded on a young bird of the rufous phase].

Falco xanthothorax Temm. Pl. Col. livr. 16, 1824, pl. 92: Brazil and Guiana [founded on an adult bird of the rufous phase].

Micrastur ruficollis jugularis Gurney, List Diurnal Birds of Prey, 1884, p. 118: Bahia [founded on an adult of the plumbeous phase].

This species has a rufous and a plumbeous phase ; examples from Bahia show both extreme and intermediate stages of the phases, but all retain some traces of the rufous on the throat and chest. Birds from Rio Janeiro are all more or less in the rufous phase, while two from Parana State and Paraguay are in the plumbeous phase.

Distribution. The series in the British Museum show a range from Bahia in eastern Brazil south to Paraguay. It does not appear to extend into the basin of the Amazon.

Micrastur ruficollis gilvicollis.

Sparvius gilvicollis Vieillot, N. Diet. d'Hist. Nat. x. 1817, p. 323 : patr. ignot. [Cayenne, apud Hellmayr, Nov. Zool. 1908, p. 290 ; 1910, p. 410.]

Nisus concentricus Lesson, Traité, 1831, p. 60 : Cayenne.

Micrastur pelzelni Ridgway, Proc. Acad. Philad. 1875, p. 494 : Sarayacu, Peruvian Amazons.

This form seems never to have but the one plumbeous phase.

Distribution. Guiana and the Amazon valley from Para to the eastern slopes of the Andes.

Micrastur ruficollis guerilla.

Micrastur guerilla Cassin, Proc. Acad. Philad. 1848, p. 87 : Jalapa, Mexico.

Micrastur interstes Bangs, Auk, xxiv. 1907, p. 289 : Costa Rica.

The rufous and plumbeous phases in this subspecies are much less differentiated than in *M. r. ruficollis*.

Distribution. From Vera Cruz State of Mexico south to western Ecuador, whence there are examples in the British Museum from Nanegal, 4000 feet, on the western slopes of Pinchincha, 10 leagues from Quito, and from the Balzar Mountains in the province of the same name in western Ecuador.

I have not examined the type of *Micrastur interstes*, but I am quite unable to distinguish examples from Costa Rica or southwards from those from Mexico.



Anders Slegel & Ando, 1891

MICRASTUR PLUMBEUS.

Micrastur ruficollis zonothorax.

Climacocercus zonothorax Cabanis, J. f. O. 1865, p. 406 :
Porto Cabello, Venezuela.

Distribution. Venezuela and possibly eastern Colombia.

Micrastur plumbeus. (Plate VIII.)

Micrastur plumbeus W. Sclater, Bull. B. O. C. xxxviii.
1918, p. 44 : Prov. Esmeraldas, N.W. Ecuador.

The following is a reprint of the description :—

“ Resembling in general colour *M. gilvicollis* from the Amazon basin, but very much greyer above, the crown and mantle bluish grey, becoming blacker on the rump and tail; below, the transverse banding extends from the throat to the thighs, but not apparently to the under tail-coverts, and is composed of alternate bands of white and plumbeous rather than white and dusky; the throat and neck are unbanded plumbeous. The tail is very short compared with other species of the genus, and has only one cross-band of white about the middle of its length, though there are traces of another cross-band concealed by the coverts. In the other species of the genus there are always two, often three, such bands.

“ Iris light brown to yellowish grey, feet orange-red to yellow, bill blackish with a yellow cere.”

Type, a male from Carondelet, Rio Bogota, Prov. Esmeraldas, N.W. Ecuador, about 450 feet elevation. Collected by Messrs. Miketta and Fleming, 23/iii./1901. B.M. Reg. no. 1902/5/5/62.

Measurements of type : Length about 330 mm., wing 178, tail 125, tarsus 64, bill (without cere, measured straight with dividers) 15. In a female the wing is 167, the tail 120. The tail of *M. r. gilvicollis* averages 153 mm., against a wing of 180 mm.

There are in the British Museum two other examples from the same district, collected by Messrs. Miketta and Fleming. Another younger bird with only the breast transversely marked, in the Tring Museum, was obtained by the same collectors in the same region.

XXI.—*Ornithological and Oological Notes from the River Somme valley at its Mouth and near Peronne.* By Major W. MAITLAND CONGREVE, M.C., R.A., M.B.O.U.

THE River Somme for many miles from its mouth is canalized, but owing to the fact that it runs through a wide flat-bottomed valley it is unable to drain the surrounding meadows, which are normally very marshy and intersected by reed and rush-grown irrigation ditches.

In many places in the valley there are large sheets of deep water, surrounded by swamps and osier plantations. The sides of the valley are fairly-well wooded, and the numerous villages are surrounded by fine old orchards of apple and pear. The higher ground above the valley is undulating and open, and highly cultivated with corn, sugar-beet, lucerne, etc. There are few hedges except in the neighbourhood of villages, but there is a fair amount of cover for birds in the numerous small, and in places very large, woods which owing to the war have not been kept free of undergrowth in the usual methodical French way.

The above is a rough description of the district in which the writer worked from March to early June of 1917. During June and part of July he soldiered in the neighbourhood of Peronne. There the River Somme is a fairly fast clear stream, normally several hundreds of yards wide and much choked, except in the main channel, by dense reed-beds interspersed by sluggish channels overgrown by water-loving weeds. The surrounding country is open and undulating. There are numerous small woods, but villages, orchards, and cultivation are non-existent owing to the depredations of the Hun in the great retreat following the Battle of the Somme.

The writer of these lines had only odd hours in which to take notes of birds and nests, and did not waste any time on species which did not interest him oologically, except that he made an occasional entry in his note-book about the

arrival or departure of migrants. Consequently, these notes will be very incomplete, and will rely for their interest on the fact that they were taken in a theatre of war under unusual conditions. Only binomial names are used as the birds were only identified by sight, and not collected.

Except where Peronne is specifically mentioned, these notes will refer to the river-mouth district only.

Corvus corone. Carrion Crow.

Common, and nesting in all the woods and spinneys. First nest with eggs found on 20 April. The eggs were slightly incubated. On that date numerous nests were being built, and the weather was anything but spring-like.

Corvus cornix. Hooded Crow.

Numerous near the mouth of the river as late as 19 April. Two pairs were found nesting near Etaples by Major L. B. Windle, R.A., and the following are notes extracted from a letter from him:—"Nests were found about April 24, and the second about May 8. The first had two eggs which I left to get the whole lot, and on returning two days later found all had been taken by somebody else. The second had three eggs and the bird was sitting. Both nests were in fir-trees, in the small bits of green stuff close to the top, and in small groves of trees which are dotted about in the sand-hills. I could not find more than these two pairs, though I searched all over the area round here within about two miles, nor did I see any of the common black crows nesting anywhere about."

Corvus monedula. Jackdaw.

Common in church towers, as at Abbeville. Not met with in the country except when feeding, as there were few, if any, suitable nesting-sites.

Corvus frugilegus. Rook.

Not so common as they are in England. Only two "rookeries" met with, viz., near Abbeville and a small one near Peronne.

Pica pica. Magpie.

Extremely common, and their nests are quite a feature of the landscape.

Garrulus glandarius. Continental Jay.

Common, nesting in all the woods and spinneys. A nest of six considerably incubated eggs in the top of an ivy-grown pollarded willow on 20 May, and another with five considerably incubated eggs on 10 June in an oak-tree.

Sturnus vulgaris. Starling.

Not very common. Nesting in typical situations, especially old Woodpeckers' holes.

Oriolus oriolus. Golden Oriole.

A pair of males first seen at Saigneville on 10 May.

A fairly common species and easy to locate owing to its curious distance-carrying note. Every wood of any size at all had at least one pair nesting in it, and they were found occasionally in quite open spinneys.

In the Peronne district they were even more common than farther north, and they were easier to locate owing to the woods being smaller.

One nest, found near Peronne in June, was suspended at the end of a thin beech bough some twenty feet from the ground, in a small wood seamed with old German trenches and dug-outs. It was a puzzle to discover where the fine sheep's-wool came from out of which the nest was constructed, for there are no civilians or, consequently, sheep for many square miles of that district. The mystery was solved by discovering several old sheep's-wool mattresses lying about 300 yards from the nest, at the entrance of a "dug-out." These mattresses had doubtlessly been looted from some Frenchman's home during the Hun occupation.

Another nest in the same district was in a Silver Birch, and was made entirely of paper and one or two big chicken's feathers. Unfortunately there were two large young birds in the nest, so it could not be cut down. The paper would have been of interest, as it was probably "made in Germany."

The district was left shortly afterwards, so the nest could not be again visited for further examination.

The time for fresh eggs of this species appears to be during the first week of June.

Chloris chloris. Greenfinch.

Not uncommon, but no nest was found.

Coccothraustes coccothraustes. Hawfinch.

Only one seen, and that was near St. Valéry on 10 May and presumably breeding in the wood in which it was seen.

Carduelis carduelis. Continental Goldfinch.

Not uncommon in the orchards round the villages of Saigneville, Boismont, St. Valéry, etc. They are prized as cage-birds, as at home, for two pairs nesting in some pear-trees beside a farm-house were being most carefully preserved by the owners of the land.

Passer domesticus. Sparrow.

Common.

Passer montanus. Tree-Sparrow.

Common, and breeding in the holes of apple and other trees. In the neighbourhood of Albert they positively swarmed last winter, and were far commoner than *P. domesticus*.

Fringilla cœlebs. Chaffinch.

A common breeding species.

Acanthis cannabina. Linnet.

Fairly common, and breeding in gorse patches. The gorse appeared to have been completely killed by the hard frost of last January–February and never showed the least sign of flower or even green.

Emberiza calandra. Corn-Bunting.

Common in both districts, but most so in the neighbourhood of the sea.

Emberiza citrinella. Yellow Bunting.

Common everywhere, and breeding in banks and gorse patches.

Emberiza cirrus. Cirl Bunting.

Common, especially in the neighbourhood of villages, and breeding in grassy banks bordering lanes. Eggs were first found on 6 May. In all, four nests were found round Saigneville and St. Valéry. The typical clutch appears to be three.

Emberiza schœniclus. Reed-Bunting.

Not uncommon, and breeding in suitable situations in marsh-land.

Alauda arvensis. Sky-Lark.

A common breeding species.

Galerida cristata. Crested Lark.

Common, particularly on the sea-coast and round the outskirts of Abbeville; also everywhere in the Peronne district.

They appear to have numerous broods, and nests were found as follows :—

14 May. Nest with large young; nest of four fresh eggs.

Both the above on the side of the old Abbeville fortification ditch.

23 May. Nest with one fresh egg in same situation as above.

6 June. Nest with four fresh eggs. Same place as above.

16 June. Nest of five moderately incubated eggs at Roisel (Peronne district).

Motacilla alba. White Wagtail.

A pair here and there. A pair built under the roof of an open shed in Saigneville village and should have had eggs by about 14 May, but the nest was destroyed by somebody or other. A nest of six eggs slightly incubated on 14 May. This nest was near the top of an old wall forming part of

the ancient fortifications of the town of Abbeville. The parent-birds were not very light-coloured, and it is possible that Pied and White Wagtails overlap and interbreed in this district, as undoubted "Pieds" were seen now and again in May as also were seen unduly dark-looking "White" Wagtails.

Motacilla lugubris. Pied Wagtail.

Common in the early spring. Not proved by the writer to be actually breeding, though undoubted specimens of this species were seen now and again in May, but there never happened to be time or opportunity for investigation.

Motacilla raii. Yellow Wagtail.

A few seen among Blue-headed Yellow Wagtails on 28 April near St. Valéry. It is probable that a few pairs remain to breed, as undoubted males were seen at the end of May among the lucerne crops near the mouth of the river.

Motacilla flava. Blue-headed Yellow Wagtail.

Very common on the meadows and lucerne fields near the mouth of the river. This Wagtail was first noted on 27 April, and a colony of about ten pairs had taken up their residence in a marshy, coarse grass- and rush-covered flat near St. Valéry by 28 April.

The first two nests were found on 10 May, well concealed under tufts of coarse grass, and they contained respectively one egg and three sucked eggs. A nest with six fresh eggs was found on 15 May, and three more nests with sucked eggs. A day or two later a friend, who used to go about with the writer, caught a Cuckoo red-handed beside another nest of this species with newly-broken and partly-sucked eggs. The Cuckoo was shot, and subsequently another Cuckoo was found dead, evidently shot, on the same patch of ground. Other eggs found sucked were those of the Reed-Bunting and Partridge. It seems impossible to believe that a soft-billed bird like a Cuckoo can suck Partridge eggs, but there was no doubt about the Wagtails'.

No Harrier or other egg-sucking bird or beast was ever seen in that neighbourhood. By 22 May the colony was practically non-existent, but one more nest, containing young, was found at the end of May by the same friend.

Anthus trivialis. Tree-Pipit.

First noted on 29 April. Common and breeding in typical situations. Several nests were found, the average date for fresh eggs being 20 May.

Anthus pratensis. Meadow-Pipit.

Common, especially near the sea-coast.

Certhia sp.? The Tree-Creeper.

Tree-Creepers were fairly common among the willows in the river-valley. The remains of an old nest, containing very strongly-marked egg-shells, was found in a pollarded willow. It appeared to date from a previous year. Unfortunately no new nest was found, though a good deal of time was spent trying to do so.*

Sitta cæsia. Nuthatch.

Scarce. Two pairs were met with in the orchards at Saigneville and one nesting-hole was located, but no eggs were laid, although the parent-birds were in the immediate vicinity on many occasions.

Regulus regulus. Golderest.

Some birds of this species lived in some fir-trees near St. Valéry during April, but seemed to disappear later. The district is a bad one for Golderests, as fir-trees are very scarce and a yew-tree was never met with.

Parus major. Continental Great Tit.

Common, and breeding in suitable situations in the orchards round Saigneville and other villages in the district.

* Since this note was written I took a nest on 18 April, 1918, near Ypres containing six eggs. The male bird, shot for the purpose of identification, proves to be a typical example of *C. b. brachyductyla*, which is probably the prevailing form in northern France.

Parus palustris. Marsh-Tit.

Not uncommon. A nest with eight fresh eggs on 8 May. It was about six inches down from the crown of a rotten pollarded willow and some six feet from the ground. The nest was very substantial and did not resemble that of a Willow-Tit, though it would, perhaps, have been more satisfactory if identification could have been made even more certain by obtaining a bird.

Parus cæruleus. Continental Blue Tit.

Common and breeding in suitable holes in the orchards.

Ægithalus caudatus. Long-tailed Tit.

Fairly common up till the end of April, when they disappeared. One nest was found suspended in broom in the Forêt de Crécy on 3 May with one egg. The nest was unfortunately subsequently deserted owing to rough treatment by one of the writer's men.

Lanius collurio. Red-backed Shrike.

First noted on 3 May. A not uncommon breeding species in the hedges bordering railway-lines round Abbeville.

Sylvia communis. Whitethroat.

No note was made of the arrival of this species, but it is fairly common and a few nests were found.

Sylvia curruca. Lesser Whitethroat.

First noted on 29 April. A fairly common breeding species.

Sylvia simplex. Garden-Warbler.

First noted on 29 April. Common.

Sylvia atricapilla. Blackcap.

First noted on 14 April. Common.

Acrocephalus scirpaceus. Reed-Warbler.

A very common breeding species in both districts. First noted on 14 May.

Acrocephalus palustris. Marsh-Warbler.

Common in both districts. The first pair was noted on 20 May. In all, nine nests were found at different times. The most common situations in the river-mouth district were in reed-filled ditches and spinneys. Four nests were suspended on an average two feet from the ground in dead reeds up which bindweed was growing, and in one case privet as well. Another nest was in willow-herb. Several pairs nested on the high ground well above the valley, and nowhere near water, in a very well-grown patch of rye bordering the writer's camp. One nest was located in this patch by standing on a box and thus getting the necessary height to look down on the rye, which was quite two feet six inches high. The old birds would periodically pop out, carrying long pieces of dead stalk. They would dodge along near the top of the rye and then dive in near the nest, which by careful marking was eventually found. It was suspended in a mustard plant about one foot from the ground. This nest was most clumsily made of dead rye-grass reduced to the consistency of ordinary straw. The nest was subsequently beaten down to the ground by a tremendous hail-storm, but a parent-bird nevertheless valiantly continued to sit on three eggs (possibly a fourth was destroyed) although the nest was actually on the ground.

In the Peronne district a colony of perhaps ten pairs was found breeding in dense high nettles growing in a marshy hollow in which willows and alders also grew. The nests found were suspended on three nettle stalks at from eighteen inches to two feet from the ground.

The dates on which eggs were found were as follows :—

RIVER-MOUTH DISTRICT:

June 9. (5) fresh.

11. (5) considerably incubated.

16. (5) incubation slight.

16. (4) ditto.

20. (3) ditto.

21. (4) considerably incubated.

PERONNE DISTRICT :

June 23. (5) very much incubated.

24. (4) incubation slight.

26. (4) ditto.

With regard to their song, I noticed that those that lived in the rye-grass mimicked Partridge and Quail, which were common in the immediate neighbourhood. This was, of course, in addition to many other successful efforts at mimicry.

Acrocephalus arundinaceus. Great Reed-Warbler.

First noted on 14 May in a reed-bed near St. Valéry. A nest containing five fresh eggs found on 11 June. This is a very common species in the reed-beds at Peronne.

Acrocephalus schœnobæus. Sedge-Warbler.

First noted on 29 April. Not a very common breeding species, and only one nest met with.

Hypolais icterina. Icterine Warbler.

Although most carefully sought for, this species was not identified on the Somme, but is common in river valleys north of Abbeville.

Phylloscopus trochilus. Willow-Warbler.

First heard on 14 April. A fairly common breeding species.

Phylloscopus collybita. Chiffchaff.

First heard on 8 April. A fairly common breeding species.

Turdus viscivorus. Mistle-Thrush.

Not common. A pair here and there nesting in village orchards.

Turdus musicus. Continental Song-Thrush.

Not common, and extremely shy and retiring. They appear to breed much later than those at home. Nests with five and four eggs respectively were found in the Forêt de

Crécy on 8 May and 20 May. In each case the nest was about seven feet from the ground against the trunk of a tree. The eggs were fresh. A nest containing five fresh eggs was found on 21 May in a hawthorn hedge near St. Valéry.

Turdus iliacus. Redwing.

Last seen on 3 May.

Turdus pilaris. Fieldfare.

Last seen on 29 April.

Turdus merula. Blackbird.

Common, but not nearly so much so as at home.

Turdus torquatus. Ring-Ouzel.

Two observed on migration on 29 April.

Phoenicurus phoenicurus. Redstart.

First noted on 8 April. A common breeding species, and a pair in nearly every orchard.

Erithacus rubecula. Continental Robin.

Fairly common. The first nest was found on 4 May and contained three young and three unfertile eggs. Subsequently nests with six, six, and seven fresh eggs were found on 10 May and 12 May. All these nests were in lane-side banks in Saigneville. A friend of the writer's found two other nests with six and seven eggs respectively near St. Valéry late in May. Seven is apparently a not uncommon clutch and appears to be larger than is usual with the British Robin.

Luscinia megarhyncha. Nightingale.

First heard on 6 May. Common in suitable woods and spinneys.

Saxicola rubicola. Stonechat.

A pair here and there, but not common. A nest with five considerably incubated eggs found on 8 May in a tuft of grass by the roadside at Neuville near St. Valéry.

Saxicola rubetra. Whinchat.

First noted on 9 May. A pair here and there, and commonest on the low-lying cultivated ground near the river-mouth, where they probably nested in the lucerne.

Ænanthe ænanthe. Wheatear.

Common near the sea, where they were probably breeding in the shingle-banks.

Accentor modularis. Hedge-Sparrow.

Not uncommon round the villages.

Troglodytes troglodytes. Wren.

A common nesting species.

Muscicapa grisola. Spotted Flycatcher.

First noted on 4 May. A common nesting species.

Hirundo rustica. Swallow.

Common. The sites selected for nesting in the Peronne district were often quite remarkable owing to the absence of buildings. The birds often used the circular Nissen huts put up for the troops, and were extraordinarily tame and confiding. A wooden porch put up outside the ruined single room occupied by the writer at Roisel was used directly it was put up. Another pair made valiant efforts to build their nest under the hood of one of the Battery lorries. The lorry went out regularly, but the old birds carried on building operations on its return and only gave up after two or three days.

Again, there was the curious case of a pair that managed to stick their nest against a vertical wall of a windowless room used by the officers of a Brigade H.Q. as a mess. The nest had no sort of underneath support.

Delichon urbica. Martin. }

Riparia riparia. Sand-Martin. }

Both these species were moderately common, and found nesting in suitable situations.

Dryobates major. Spotted Woodpecker.

Fairly common. The only breeding-hole which the writer thought was a certainty was appropriated by a pair of large tree-mice, or perhaps rats. The species was quite unknown to the writer.

Picus viridis. Green Woodpecker.

Common. Their breeding-holes were usually in most inaccessible positions well up the bare trunks of large beech-trees.

Iynx torquilla. Wryneck.

Not observed till late in July, and that was in northern Belgium.

Cuculus canorus. Cuckoo.

Fairly common. A pinkish type of egg found in a Reed-Warbler's nest near Saigneville on 9 June (fresh). The Cuckoo had completely broken and practically destroyed one of the Reed-Warbler's eggs, and, of the remaining three, one was badly holed.

The egg-sucking propensities of a certain Cuckoo are remarked on under the heading of the Blue-headed Yellow Wagtail.

Micropus apus. Swift.

Common.

Alcedo ispida. Kingfisher.

Occasionally seen.

Flammea flammea. Barn-Owl.

Common, and constantly flushed from old willows.

Carine noctua. Little Owl.

Very common. Nests with five and three fresh eggs respectively found near St. Valéry on 19 May. In one case an old bird sat so closely that it allowed the writer to place his hand underneath it without making the least attempt to move away or retaliate. The nests found were in old apple-trees.

Circus pygargus. Montagu's Harrier.

Not observed until 8 June, when several were seen quartering in the extensive fields of corn in the neighbourhood of the Forêt de Crécy. One was seen towards the end of June in the Peronne district.

Buteo buteo. Buzzard.

Often noticed in the Forêt de Crécy. Several could at any time be seen on the wing at once, and they doubtless breed there, but no nest was found.

Accipiter nisus. Sparrow-Hawk.

Not uncommon.

Falco tinnunculus. Kestrel.

Very common, and nesting in old Crows' nests.

Anas boschas. Wild Duck.

Common and breeding in the swamps.

Mareca penelope. Wigeon.

A pair seen on a pool near the mouth of the river on 9 May, but they were not seen after that date.

Spatula clypeata. Shoveler.

Three seen on a pool near the mouth of the river on 9 May, but not seen after that date.

Nyroca ferina. Pochard.

One seen on a pool near the mouth of the river on 9 May, but not seen after that date.

Ardea cinerea. Heron.

Occasionally seen near the river-mouth.

Ciconia ciconia. White Stork.

Five or six first seen on 7 June on the grassy flats near the river-mouth. Subsequently, a friend informs the writer, they became much more common, and he saw them constantly round St. Valéry.

Gallinago gallinago. Snipe.

An odd one seen now and again, but there was no drumming.

Limosa sp.? Godwit.

A flock of about twenty near the mouth of the river in summer plumage and last seen on 9 May.

Vanellus vanellus. Lapwing.

Large flocks in the early spring, but none remained to breed.

Podiceps fluviatilis. Little Grebe.

Met with near Peronne, and a nest containing four fresh eggs was found in the river swamp on 15 June.

Gallinula chloropus. Moorhen.

Not very common. Breeds.

Fulica atra. Coot.

Common in the early spring, but did not appear to remain for breeding purposes.

Columba palumbus. Ring-Dove.

A fairly common breeding species.

Streptopelia turtur. Turtle-Dove.

A common breeding species. First noted on 6 May.

Perdix perdix. Partridge.

Very common.

Coturnix coturnix. Quail.

Extremely common in both the river-mouth and Peronne districts, especially the latter.

Round Peronne the thousands of acres of uncut grass must have meant a most successful undisturbed breeding-season.

In conclusion, the writer wishes to state that he fully realizes how incomplete this list is. Species such as Hobby, Bittern, the Rails, Goshawk, and Honey-Buzzard were carefully watched for with no success, and the Gulls and Waders which were common near the sea during the early spring were not sought for and identified owing to lack of time and inclination.

XXII.—*Further Ornithological Notes from the Neighbourhood of Cape San Antonio, Province of Buenos Ayres.*
Part I. PASSERES. By ERNEST GIBSON, M.B.O.U., F.Z.S.

(Text-figures 3 & 4.)

INTRODUCTION.

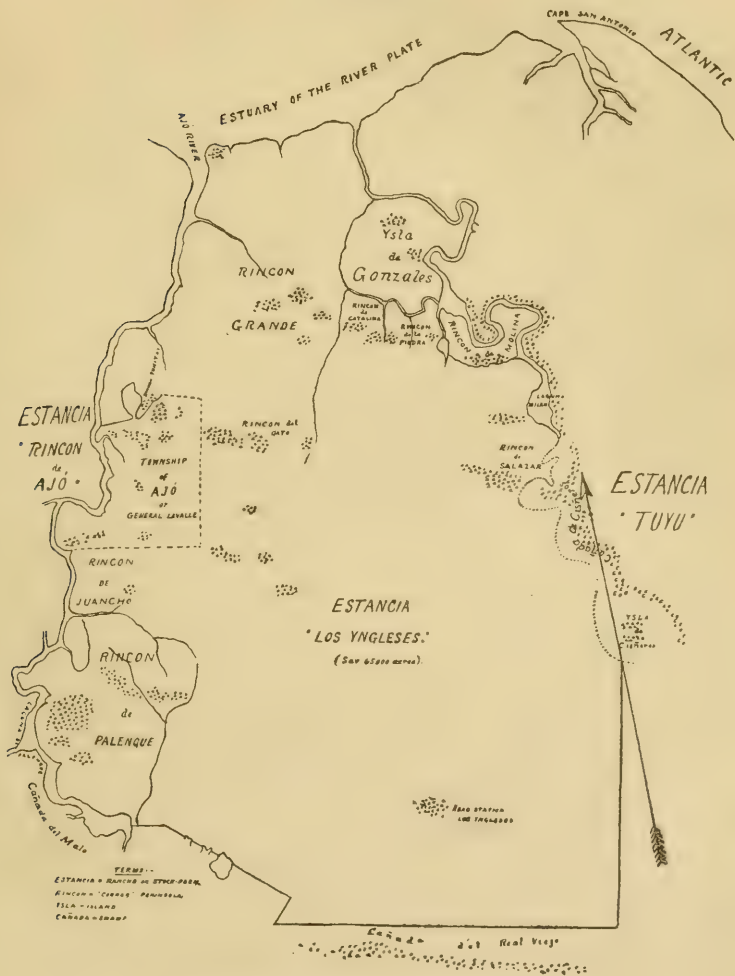
As it is nearly forty years since I wrote my first notes on this subject (*Ibis*, 1879, p. 405), I may be justified in recapitulating and extending the preface regarding the exact locality referred to, and the nature of the terrain. The former is important, for, as Mr. Claude H. B. Grant remarks (*Ibis*, 1911, p. 81):—"It is a very interesting locality, inasmuch as it is about the southern limit of many woodland species common at Buenos Ayres and to the northward, and is about the northern limit of many Patagonian species that migrate northward in the winter months." The topographical details are, in their turn, worthy of attention, bearing in mind the unique conjunction of the Atlantic Ocean and the estuary of the River Plate (totally dissimilar in their elementary and coastal formations): the mainland, or "Campo," of pure Pampean origin; the indigenous or natural woods of the littoral; and tidal creeks and salt lagunes, which again merge into and lose themselves in immense freshwater swamps and small lakes.

The smaller map (text-figure 3) establishes the exact geographical position, the larger one (text-figure 4) the physical features of my "Happy Hunting-ground," though without attempting to delineate in detail the labyrinth of salt-water creeks which characterize the northern or River Plate side, or to depict the maze of swamps and marshes on the remainder of the land, principally towards the southern end.

The Gibson "Yngleses" estancia or stock-farm is now approaching its centenary. When I last wrote from it, in 1878, its large extension of 65,000 acres was unfenced, and

north-west and south-east. These would seem to indicate that the confluence of the estuary and the ocean had combined

Text-figure 4.



Sketch-map of the estancia Los Yngleses.

to alter the shape of the Cape since the formation of these old coast-lines or beaches.

Immediately inside the cape, and extending all round the Bay of Sanborombon, the coast is of an entirely different character. For three or four miles inland, and encircling the whole of the bay, are found the "rincónes," a maze of islands and peninsulas, formed by tidal creeks of more or less importance, and the ramifications of which are innumerable. The soil is a clay, hard enough on the surface, but becoming soft as butter a short distance down, and is strongly impregnated with salt. The ground shakes for a considerable distance when a stake is driven in by a heavy mallet. Horses, unaccustomed to the district, betray a manifest uneasiness. And woe betide the unlucky rider who—having traversed our great freshwater swamps, his horse "withers under" and the rushes towering overhead, in perfect immunity—innocently puts his mount at the deceptive little creek, only three or four yards wide and not many inches deep; in all probability, rider, saddle, and horse become three separate factors within one wild horrifying minute, and the horse may have to be dragged out by another with a lasso! "What of the pass, Palomeque?" I asked suspiciously of our guide, as a baker's dozen of us faced a mud-flat intersected by a streamlet, in the Rincón Grande (Palomeque, be it noted, knew the rincónes as "the palm of his hand," and his horse was accustomed to them, whereas all ours were from the head-station side). "The going-in is good," he replied, and five minutes later finished the sentence with a cynical, "but I do not know about the coming-out!" Three of us—Palomeque, the sub-manager, and myself—had won through; the ten peones were struggling out on foot, mud-bedaubed, and dragging their plunging half-frantic horses on to *terra firma*. The men were of various nationalities, and their language emulated that of our Army in Flanders, past and present. The rincónes have a vegetation consisting principally of jungles of such giant-grasses as the Pampa-grass (*Gynerium argenteum*) and a species of Esparto three feet high. The most of the so-called *terra firma* and all the tidal creeks are inhabited by a small burrowing crab in countless myriads;

and the creeks are consequently called "cangrejales" (from "cangrejo," a crab). The rincónes are evidently of a very recent formation, and are perceptibly both rising and becoming firmer *.

The shore of the Sanborombon Bay is muddy, and various salt-water Carices fringe it in parts, from the cape upwards. A few rocks of that curious formation, known locally as "tosca" (the loëss of the Pampean formation of German geologists), make their first appearance also on rounding the cape and advancing into the bay. But these are rare.

As I have said, all the cangrejales merge into freshwater swamps. These must resemble the former fens of England, with the difference that a drought may dry up the largest and deepest. They are to be traversed pretty well everywhere on horseback, especially by the narrowest or best-known passes. But to launch oneself into the heart of a "cañadon" (superlative of "cañada," a swamp) of several hundred acres in extent, and explore it for hours at a time—as I have so often done in the course of my ornithological pursuits,—requires on the part of the rider a thorough development of the bump of locality, and that his horse should be very strong and tame. It is a very serious matter, on a dark winter's night, to make a mistake returning home late from a distant sub-station ("puesto") and, missing one of the passes, get hopelessly lost; I have known of one or two cases where horse and rider failed to strike any higher ground, and ultimately succumbed to cold and exhaustion. The cañadas form the great drainage-system of the district, and have an existent though almost imperceptible current. The deepest have only about five feet of water, and then, perhaps, another foot of mud. Their vegetation consists principally of the beautiful dark green rush known as "Junco" (*Scirpus riparius* Presl); the "Espadaña" or sword-bladed flag, and "Totorra" of a similar nature; and the "Durasnillo blanco" (*Solanum glaucum* Dunal), a deciduous-stemmed plant, with bunches

* The Bay of Bahía Blanca has its "cangrejales." As also that of San Blas, between the Rivers Colorado and Negro.

of mauve-coloured flowers and later on clusters of dark purple berries,—all of which grow to a height of from five to seven feet above the surface of the water. There are many other aquatic plants, but I will only mention the prevalent duckweed or “Camalote” (*Ceratophyllum* sp., not *C. australis* Griseb., the only hitherto-described South American species), which lies in beds on the surface of the water, particularly in the open spaces, and when in full growth at certain seasons of the year forms a very awkward entanglement to the traveller. I remember the horse of our head cattle-man being drowned one night, the rider narrowly escaping with his life by clinging on to the tail of another, the rider of which had gallantly turned to his rescue (for the whole party of half-a-dozen was in serious difficulties at the time). Notwithstanding the almost stagnant nature of these swamps and the abundance of decaying vegetation contained in them, they are perfectly healthy and give off no injurious malaria. Doubtless this is to be accounted for by the level country being so frequently and thoroughly swept by the winds, from the Andes to the ocean; and by a considerable amount of nitre and salt inherent to the soil and vegetation—a good example of the latter being an abundantly-distributed *Salicornia* (*Salicornia* sp.), called here “Júme.”

We are fortunate in having many natural woods (the exception to the “Treeless Pampas”), part of that strip which extends from Buenos Ayres to Cape San Antonio, and from there along the sea-coast (a little inland) until it culminates on a large scale in the Montes Grandes, some forty miles south. Those of the Yngleses head-station, though not large, are singularly picturesque, being situated on and about a group of dunes of a height varying up to twenty or thirty feet. The “Tala” (*Tala celtis*) predominates; but the evergreen “Coronillo” (*Scutia buxifolia* Reiss.) is abundant; and the “Quebrachillo” or “Sombra de Toro” (*Iodina rhombifolia* Hook.) is not uncommon. There is a large distribution of the “Sauco” or Elder (*Sambucus australis* Cham. et Schlecht.). The undergrowth or brushwood

consists principally of the poisonous (to livestock) "Durasnillo negro" (*Cestrum parqui* L'Hérit.) and the prickly sweet-flowered "Brusquilla." The blue Passion-flower with its golden fruit is common in all the woods, as are various other creepers*; and a few Air-plants (*Oncidium?* sp.), with purple and crimson blossoms. The preceding are the most salient features in the woodlands.

The "camp," as all the English familiarly call it (from "el campo," the country, or plains), is quite level in this district, no roll in the prairie. Sir Francis Head, who, in his 'Ride Across the Pampas,' delineates them better than anyone I know, gives a most graphic description of the way in which a rancho, a tree, or a herd of cattle or horses, appears on the horizon, is reached, passed, and fades in the distance, to be replaced by some such other object, as the rider gallops steadily on—fifty miles before noon, ninety or a hundred by the time he finally dismounts for the last time and unsaddles his second, third, or fourth horse (verily, he was a mighty rider before the Lord, was the said Sir F. Head!). Words, however, cannot describe the Pampas; they need to be seen to be appreciated properly. It is strange that various writers find their influence to be gloomy and saddening, and attribute the natural gravity of the Gaucho (the Horseman of the Plains) to this most unnatural cause. They are solemn and impressive at times—in a magnificent thunderstorm, rolling up from the horizon to the zenith in a few minutes; or at night, with a fierce Pampero wind driving a few white clouds across the full moon, and bearing on its blast the uncanny shrieks of the "Mad Widow" (the Southern Courlan, *Aramus scolopaceus* Gm.) from the swamps; or again, when the said swamps have been fired in a great drought, and by day or night the landscape becomes a roaring crackling inferno of fire and smoke. But commend me to the warm sunlight and the pure air, the sensation of perfect freedom in that vast solitude, the line where plain and sky meet so palpably yet so

* The well-known *Solanum*—green and scarlet-berried—is also indigenous and abundant.

unattainably, though the long leagues gather behind one, day after day; while the only sounds are those of the breeze among the grasses and scarlet verbena, the occasional cry of a bird, and the continuous dull beat of the horse's hoofs on the springy turf, to the jingling accompaniment of the Spanish saddle-housings and the cheery bell of the *madrina* mare leading the *tropilla* ahead. "*Paja y cielo*," as Cunninghame Graham aptly puts it, "Grass and sky."

The actual alluvial soil here is shallow, and consists of about nine inches of black earth, followed by a foot of grey clay ("*greca*"); then comes sand, a deeper belt of blue clay, and after that—more sand! I had hitherto written that the preceding expressed all that was known of the depth of these strata. But a few years ago the Government undertook the sinking of an artesian well in the township of General Lavalle or *Ajó*. The cost ran to several thousand pounds; the boring reached a depth of over 2500 feet; no potable water was struck, and the geological formation throughout was purely Pampean—sand, clay, *loëss*, etc. There are no stones or pebbles in the soil, not even the dimension of a pin-head; but sea-shells make their appearance at from eight to ten feet below the surface of the ground. Water is found at a depth of from four to eight feet, but is often brackish or even salt. It is, of course, surface or rain-water, and is retained *in situ* by the second belt of blue clay I have mentioned; if this is traversed, the up-welling is a water not only salt, but bitter. Probably the district only averages six feet above the level of the sea.

Of the herbage or grasses, suffice it to say that they have undergone various important modifications during the past century of grazing—the Pampa-grass, for example, formerly covering a large part of the centre of the *estancia*, being only found in the *rincónes* now, its place being taken by soft grasses. De Moussy, in his work on the Argentine Republic, includes this district among the highest class of pastoral lands in the Province of Buenos Ayres; and Buenos Ayres yields precedence to no other country in the world in that respect. Rye-grass is the staple indigenous pasture;

in a good season I have frequently seen it stirrup-high, wetting my feet with the early dew. Thistles, of various species, it is needless to say, abound; no writer on the Pampas has failed to expatiate on the giant thistle-beds (sometimes higher than a rider's head) which make their appearance in the spring and summer; nor, indeed, is the unfortunate traveller who has been "thistled" (*i. e.*, lost his way at night, possibly with an unruly tropilla of horses) likely to forget the unpleasant and painful experience. Very awkward, too, is the "Junquillo negro" (*Juncus acutus* Lam.), found more especially on the sandy soils of the coast, where it practically covers the terrain. Trefoils and clovers are abundant—the "Trebol de Olór" (*Melilotus parviflora* Desf.), the common "Carretilla," and others. The pretty heath-like "Hierba de Perdíz" (*Margyricarpus setosus* R. & P.) cannot be overlooked. Nor the abominable *Xanthium spinosum*, so well-named by Linnæus and by the Gauchos "Sepa caballo." The "Altemisa" (*Tagetes glandulifera* Schenk) communicates its pungent flavour to the very mutton itself. I take it that the "Camambú" (*Physalis alkikengi* Linn.) is a near relative of the Cape gooseberry. And I would particularly note the "Rossetta" (*Cenchrus tribuloides* Linn.), a useless hard grass with a cruel mace-like head, admirably suited to lame sheep and dogs, which made its first appearance after the flood of 1877, and is now found everywhere. Nor is colour wanting; flowers are more or less abundant. The pretty white blossom of the "Hierba de mosquito" (*Lippia nodiflora* Rich) is dominant in the summer. Acres of a sorrel (of which there are two varieties) give a lovely pink or pale lemon-coloured carpeting, extremely rare and delicate. The two verbenas, scarlet and mauve (the white one I have only met in the Banda Oriental), are common. Convolvulus and vetches of various kinds abound. And there are many others.

In palæontological remains the district is very poor, as might be inferred from its low elevation. Fragments of the carapace of the *Glyptodon* are occasionally found on the Atlantic sea-board, amongst the *débris* scattered along

the shore. There are also the remains of six more or less incomplete skeletons of whales on the Yngleses alone.

About the year 1876 I made the interesting ethnological discovery (in four different localities) of extensive remains of Indian pottery, "bolas perdidas," flints, etc. The flints were very numerous as regards flakes, and some of the finished arrow-heads of excellent workmanship. These last conclusively prove that they belonged to the former Guarani Indians, and not to the present races now inhabiting the pampas of Buenos Ayres. [N.B.—The preceding is a quotation from my previous paper. The end of the Indians—Tehuelche and Pehuelche—came in 1880, when General Roca's expedition swept clean the Pampa Central.]

What follows, then, as may be gathered from these notes, is a natural division of all our birds into three great classes—namely, those of the wood, the plain, and the swamps or marshes. The rincónes have also a few species peculiar to them; but, again, on the other hand, the shore has none.

The thirty-seven years that have passed since I last wrote have produced no changes in these bird-solitudes, now more of a sanctuary than ever. The general use of wire-fencing has been conducive to their protection, inasmuch that the public is restricted to the roads; the paddock-system has reduced the number of shepherds by two-thirds; and the gangs of hunters of that giant water-rat, the "Nutria" (*Myopotamus coypu*), accompanied by packs of dogs, no longer rove over the land at their own sweet will*. The nearest railhead is still sixty miles off, and likely to remain so. Various droughts (one of four years' duration) and floods (the last—the greatest on record—enduring for nearly three years) were productive of extraordinary variations in bird-life; but have always been followed by a return

* "Valiente! Me vas á privar de nutriar donde quiero?" (Anglice: "Oh boaster; Dost thou purpose forbidding me to hunt the nutria anywhere I choose?"—using the insolent second person) was the truculent reply I received on one occasion from the leader of half-a-dozen of these men, who, with a score of mongrels, were raising pandemonium as they systematically quartered a half-dry swamp.

to normal conditions. In the course of the big drought the swamps not only dried up in all their extension, but their aquatic vegetation totally disappeared, and they became at one with the surrounding plains. In October of 1913, when the great flood touched its highest point, two-thirds of the Yngleses was under water; and the old joke was revived that the Gibsons bred their Lincoln sheep to a web-footed type! In the total course of forty-five years, I have observed the increase of one or two species of birds; whilst a few others have diminished, from natural causes.

Probably, I may not have further opportunities of continuing these notes. Voyages to and from the River Plate are not of a festive nature at present. I also found on my last two visits to the Yngleses (1915 and 1916) that my once-good horses had degenerated sadly—they galloped heavily and stumbled frequently. Localities, too, had struggled absurdly far apart, as compared with my former estimates (though, of course, the “legua pampa” was always of a similar quantity to the “Scotch mile”). However, the Buenos Ayres Museum and myself have arranged to exploit the district conjointly, by means of one of the museum’s collectors. My former collections are to be found in the Museums of Buenos Ayres, London (Natural History Museum), Edinburgh, and Dresden. I believe there are a few specimens also in Dublin and Cambridge.

To Mr. Ogilvie-Grant and Mr. Charles Chubb, of the Natural History Museum, I am indebted for much kindly assistance, in identification and other matters, as also to the good services of Mr. James Wells—which I take this opportunity of gratefully acknowledging.

The enumeration and nomenclature herein followed is that of Selater and Hudson’s ‘Argentine Ornithology,’ except when the species in question does not happen to figure in that work. This publication has been my general authority since it first saw the light in 1889; nor could I wish a better guide in field-work than Mr. Hudson’s accurate and interesting observations. Otherwise, any further references are confined to my own former paper

(Ibis, 1879, pp. 405-424; 1880, pp. 1-38, 153-169), and those by Mr. Claude H. B. Grant (Ibis, 1911, pp. 80-137, 317-350, 459-478; 1912, pp. 273-280), who collected in this neighbourhood on behalf of the British Museum and myself.

2. *Turdus rufiventris* Vieill. Red-bellied Thrush.

Very abundant in the woods and garden, and even in the smaller plantations and gardens of the numerous shepherds. The song, sweet and clear, may be heard all the year round, though, of course, is more in evidence in the spring, and then generally in the early morning and the evening. Its partiality for grapes and figs is much to be deplored, for, of the various species of fruit-eaters which devastate the vines and fig-trees, the mellow-toned Thrush is the one least readily to be spared.

It will nest familiarly in a jasmine of my verandah, or in a shrub a few yards from the front-door. And I have found a nest with young, inside a deserted old tumble-down rancho, round which there grew only half-a-dozen stunted acacia-trees, and the surroundings were swamp and plain. The usual situation, however, is an elder-tree or bush, in the woods by preference; in any case it is concealed as much as possible by thick foliage. The height from the ground varies from three to ten feet, the general average being about five or six. It is generally very well put together; sometimes deeply cup-shaped and solid. The outer materials are of grass, moss, wool, and dry plant-stems; then follows a course of mud, more or less thick (on one occasion I found this substituted by a mixture of sand and dry grass); the lining consists generally of fine roots, fibres, or grass. As early as 26 August I have observed a completed nest, though I do not recollect taking eggs until a month later. All the month of October constitutes the laying season. Two nests with full-fledged young, on 27 January and 2 February respectively, are exceptional, and may represent a second brood.

The eggs not unfrequently number four, though three is

the more usual clutch and the number of nestlings reared. Ground-colour pale blue, thickly spotted with reddish brown; generally most marked towards upper end, where it sometimes takes the form of a ring or cap. The blue is more pronounced than in those of the Calandria Mocking-bird (*Mimus modulator*), and the eggs generally rounder in shape; otherwise there is much and confusing similarity between the eggs of the species.

Measurements: General average 29×21 mm. Largest clutch 29×22 mm.; smallest 26×20 mm.

6. *Mimus modulator* Gould. Calandria Mocking-bird.

It would be impossible to add to, or improve upon, Mr. Hudson's notes on this species. As abundant in the district as *Turdus rufiventris*, it shares in many respects—food and locality—the latter's habits. It is a voracious and bold fruit-eater, and is not deterred by scarecrows in the shape of stuffed cats and hawks, nor driven far afield by shooting. Generally distributed about the woods, it is equally at home in the patio and around the houses, where it examines the fresh sheep-skins and the rubbish-boxes in front of the kitchens, for scraps of meat and grease. Like the Thrush above referred to, it will nest in the creepers of my house-verandah; and, what is more, the whole family will continue to roost subsequently in the same locality until the approach of the following spring. Indeed, the continuity of the family-association is very marked all through the autumn and the greater part of winter. A group of nine, however, recorded in the middle of April, must have consisted of two families. Courageous and pugnacious are adjectives well merited by the Calandria. Away back in the year 1875 I made the following note:—"Saw a Calandria—after repeatedly trying to dislodge a Carancho Carrion-Hawk (*Polyborus tharus*) from its perch on the top of a large Tala tree—deliberately alight on its back and remain there for fully half-a-minute, the Carancho merely looking round at it once or twice." The date being 5 August, there could be no question of a nest or young to defend. It was a day

of surprises, for, in an open part of the same paddock, my attention was drawn to an attack by a very large nocturnal moth (*Erebia odora*?) on a Chingolo Sparrow (*Zonotrichia pileata*)—a most Homeric combat, all in the bright sunlight: an incident related in my former paper. But especially in defence of its nest is the Calandria's bravery exhibited. It scolds angrily, and will approach quite close to the trespasser. Once I found a pair nesting in a quince-tree at a singularly isolated "puesto" on the Atlantic seaboard, where the Puesteros—a warden of the fences—was absent all the day, and the two or three species of wood-birds inhabiting the few trees of the garden were little accustomed to the sight of man. The Calandrias vehemently disputed my intrusion, and one of them (the female) kept pace with my hand as I parted the branches to reach the nest, which was just on the level of my eyes. I reached the edge on the one side simultaneously with the bird on the other, and had only time to feel there were two eggs when my hand got a violent and quite sufficiently painful peck from the feathered fury. My curiosity was more than satisfied, and I beat a retreat.

The nesting-season begins early in October, when the first eggs are laid, and extends to the end of the first week in November, being most general in the second half of the former month. I have seen a couple of nests with eggs at the end of November, and actually noted one on the 10th of January; but these are marked exceptions to the general rule. The bulk are placed in Tala trees (frequently isolated or apart from the main woods), Coronillo trees, Elder trees, or bushes; and, in the garden, Quince or Poplar trees. There is not much attempt at concealment, and, indeed, the scolding activity of the birds betrays the cause of their concern. I have known of a nest in an Elder bush only one foot from the ground, and another in a Poplar at the height of ten feet; but the general average is about five.

The nest itself is strongly built on the outside of thorny twigs from the Tala tree, followed by dry roots of grass and occasionally some wool or moss (in many cases this is mixed

with a little earthy matter or sand). The lining consists of fine roots, to which often is added horsehair and, more rarely, some wool or a little cow-hair.

The full clutch of eggs is from three to four (I have seen one of five), in the proportion of two of the former to one of the latter. Ground-colour pale or dull blue, thickly marked with reddish brown, tending to increase towards blunt end. They are more even in appearance and shape than those of *Turdus rufiventris*, with which, as I have remarked, they may be easily confounded.

Measurements: General average 28×21 mm. Largest clutch 30×21 mm.; smallest 28×20 mm.

8. *Mimus triurus* (Vieill.). White-banded Mocking-bird.

Of this Mocking-bird, so enthusiastically celebrated by Hudson, I have only one recorded appearance—a solitary specimen shot by Mr. M. A. Runnacles from an Ombu tree in the Estancia patio, in the autumn of 1896. We were both much interested in its occurrence.

10. *Poliophtila dumicola* (Vieill.). Brush-loving Fly-snapper.

A most dainty and charming species, resident, but irregular in its appearance, irrespective of any question of migration. Generally in pairs (I have seen three such in one morning), they sometimes associate three or four together, even five or six, which last, being at the end of January, probably constituted a family group. These pairs or parties may sometimes be found for several days in the same locality, after which they move on. Either they are worshippers of the sun for its heat, or profit by its light in their food-researches; for I have frequently observed one of the groups busily employed on the east side of a small wood in the early morning, and on the west side towards sundown. Mr. Hudson, after alluding to its "short notes," states that "it has no song." I myself, on the contrary, find (under date of 8 August) that I "twice heard it singing very prettily"; and again (from 1-17 September), "noticed that it has a very sweet short song."

The breeding-season is in the first half of November, to judge from the very sparse number of nests (only four) which I have obtained. Two of these were in Tala trees, one in a cleft and the other at the very extremity of a branch, to which it was attached like a cup to its handle; the other two hidden in thorny "Brusquilla" bushes: all four about six feet from the ground. The localities chosen were sunny, and in the most retired parts of the woods. Beautifully built of lichens, moss, and spider-webs—lined with horse-hair, small feathers and down, and rather cup-shaped—the nests much resemble those of the Chaffinch. The respective clutches of the four nests were two, three, three, and six—the last clutch of six being laid between 2 and 9 November. The colour of the eggs is a pale yellowish buff, and they are rather roundish. Measurements: 16×13 mm.

12. *Troglodytes furvus* (Gm.). Brown House-Wren.

I have absolutely nothing to add to the notes in my former paper.

15. *Anthus correndera* Vieill. Cachila Pipit.

Until the advent of Mr. Claude H. B. Grant in 1908, I had failed to separate this species from the following one (*A. furcatus*). Accordingly, all my former *Correndera* field-notes are valueless. Mr. Grant himself, however, has omitted to describe the eggs of both birds (*vide* Ibis, 1911, p. 87), so I herewith supplement his notes, from clutches of his own collecting.

A. correndera. The shape is not so elongated as would be inferred from Hudson, though perhaps more so than those of *A. furcatus*. Ground-colour a very dirty white, thickly spotted with dusky brown and drab. "In some eggs the spots are confluent," as Hudson says, "the whole shell being of a dull brownish-drab colour." To which may be added a tendency to form a ring at the blunt end. According to both Hudson and Grant, the full clutch is four. Measurements: Average 20×15 mm.

16. *Anthus furcatus* d'Orb. et Lafr. Fork-tail Pipit.

Shape of eggs somewhat rounder than in *A. correndera*. Ground-colour and markings much lighter; the former whitish, the latter lighter brown spots and speckles, with rarer tendency to increase towards the blunt end. There are, however, a few dark hair-like streaks at the blunt end, which are more noticeable in this species than in *A. correndera*. Measurements: Average 19×14 mm.

17. *Parula pitiayumi* (Vieill.). Pitiayumi Wood-singer.

I have no note of this species from 1872 (when I took up residence) until 1880. During the subsequent twelve years it occurred eight times, always in the winter months, from April to August. On six of these occasions they were single birds; on the other two a pair, which remained in evidence during all the month of August 1881 and all of May 1902 respectively. Two of the single birds were seen in the woods; the others were of the garden.

Mr. Grant chronicles it during his stay, 1908-9, but considers it only a winter visitor, in accordance with my own notes. Subsequent to 1902, there is a blank in my diary until the spring of 1913, when my previous conceptions were quite upset. On the 1st of November there appeared a single bird at the Cypress and Orange trees alongside of my house: until the 26th of December it was seen frequently and seemed very tame; twice it came to the dining-room window in search of flies, whilst we were at table, and twice it alighted on a rose-bush quite close to me (once quietly to discuss a catapillar). At other times it was observed diligently quartering the Cypress and Orange trees in search of small insects—Tit-fashion—or extracting honey from flowers. On one occasion it amused itself by actually driving off the scene that most pugnacious Tyrant-bird, *Lichenops perspicillatus*. My daughter was positive that she saw no less than three together on 8 November, and on 26 December I fancied there were two. Otherwise, only one was in evidence, and this continued to haunt the particular

Cypress adjoining my house in a way that strongly indicated a nest (but which I failed to locate amidst the dense foliage). On the morning of 8 January, after a night's thunderstorm and heavy rain, I saw two adults and what I took to be two full-fledged young in the usual lower part of the Cypress. After that, until 25 February, one bird only continued to be observed in its favourite locality, and ceased to appear after that date.

25. *Progne furcata* Baird. Purple Martin.

When writing on this species in 'The Ibis' (1880, p. 23), under the designation of *Progne purpurea* Linn., I was actually referring to *Progne chalybea* Gm. The real *furcata* is summarized in the paragraph which says:—"There were two entirely black specimens which used to appear annually at the head-station; but I have not seen them for the last year or two."

Mr. Grant records one which he obtained (the only one observed) in 1909 ('Ibis,' 1911, p. 89).

On 13 September, 1880, there appeared two. On 16 September, 1881, one. On 15 September, 1882, one. All the preceding—mine and Mr. Grant's—were in association with *Progne chalybea*. With one other exception (18 November, 1899), I have noted none since 1882.

26. *Progne chalybea* (Gm.). Domestic Martin.

To my former notes ('Ibis,' 1880, p. 23, under *P. furcata*), I have only one further observation to add. Mr. Hudson states that it "never breeds in the domed nests of other birds in trees, a situation always resorted to by the Tree-Martin (*P. tapera*)," referring, of course, to the nests of the Oven-bird (*Furnarius rufus*). Two such cases, however, have come under my notice, on 5 and 12 November, 1879, which I find jotted down under the remark: "Noticed that a pair of Domestic Martins have taken possession of an Oven-bird's nest, closing up the lower half of the entrance with mud"; and, "another similar case to the preceding observed."

27. *Progne tapera* (Linn.). Tree-Martin.

Again, I have few further notes to add to my former observations on this species, beyond confirming Mr. Hudson's remarks regarding its autumnal departure. I have occasionally, but not often, seen it congregated on a tree or trees in the wood, to the number of fifteen or twenty, and even in one instance some thirty, adults and young, in the month between 13 February and 10 March. But this, undoubtedly, is unusual.

One characteristic of *P. tapera* which has been overlooked by Hudson, Grant, and, hitherto, myself, is its untiring pugnacity. How often have I seen the victim—perhaps even the Tree-Teal (*Querquedula flavirostris*)—winding silently and desperately through the trees, whilst the equally mute Tree-Martin sped closely after it, curving with every swerve of the other like a baleful shadow. My carpenter, alluding to this habit, told me how it bullied his Pigeons, getting behind and below them and striking up at the root of the tail, sometimes knocking feathers out. His birds were much afraid of these attacks, and would promptly drop down into his yard when struck.

28. *Petrochelidon pyrrhonota* (Vieill.). Red-backed Rock-Martin.

Mr. Grant first chronicled this bird as a passing migrant on 2 March, 1909, and again on 23 February, 1910. Another correspondent further wrote me on 29 March, 1910:—“*P. pyrrhonota* is going across now. I saw a flock of from twenty to thirty this morning.” It would seem not to make any stay in our district.

29. *Tachycineta leucorrhoa* (Vieill.). White-rumped Swallow.

Mr. Hudson has written so fully on this species that he has left little for me to add. For a migrant, it is difficult to specify its arrival and departure. As he says, there is an invariable re-appearance throughout the winter on sunny days, however cold. For example, June 1875 happened to

be a particularly cold month, notwithstanding which I observed it practically every day about the buildings, woods, and plains; on the 19th I recorded "Five or six seen in the open campo, though the thermometer was at 23° F., and ice on the swamps"; on the 24th, "Very cold. After sundown saw nine or ten about the patio, chasing one another and twittering." Again, on 10 July, 1876, "Some thirty seen perched on a fence. Mild day." Or, 27 April, 1877, "Fifty or sixty seen in open campo, perched on or flying about a sheep-corral. Fine day." And so on, during many years' records. Take another abnormal instance. The 22nd of August is still exceedingly early spring, yet "Late in the afternoon a flock of over fifty made its appearance, flying about over the head-station and occasionally alighting on one of the Ombú trees in the patio, all apparently very tired. Bitterly cold day, the continuance of months of extremely frosty and dry weather. These had vanished again, the next day." Roughly speaking, the consensus of my notes for this district would give the middle of August for the spring arrival and the middle of April for the general autumnal departure.

As described by Mr. Hudson, the nesting-season is initiated by much inspection of old and new sites, and a prolonged warfare between the would-be occupants. Taken as a whole, the sites which are preferred are those in trees, generally the deserted abode of the Red-crested Woodpecker (*Chrysoptilus cristatus*); next in favour are holes in buildings and mouths of waterpipes, etc. It has never been my fortune to corroborate Mr. Hudson's statement that "It sometimes lays in a tree, in a large nest, previously abandoned, of the Lenatero or Firewood-gatherer (*Anumbius acuticaudatus*)." But I once found a nest, all feathers, within that of an Oven-bird (*Furnarius rufus*). On the neighbouring Estancia of the Tuyu one of the entrances to the garden of the head-station is through an archway formed by the jawbones of a whale. In a cavity of this, about eight feet from the ground, I observed a Swallow flying in and out, evidently to its nest. The fact

of a pair of Swallows having taken up their abode in the skull of a whale is somewhat reminiscent of the anachronism of Samson's beehive in the dead lion!

Four or five eggs is the general number of a clutch (only once have I seen six). These are pure white, of an elongated pear-shape, and average 21×14 mm.

30. *Atticora cyanoleuca* (Vicill.). Bank-Swallow.

The Bank-Swallow has, to all practical purposes, passed beyond my ken for the last thirty-five years. It is still to be seen occasionally in the district (see Ibis, 1911, p. 92). But in remarking that "it does not now breed in the Ajó district, or if so very sparingly," Mr. Grant omits to furnish the clue to his statement. Mr. Hudson describes how the species was common on the level Pampas because it took possession of the forsaken hole excavated by the little Miner (*Geositta cunicularia*) in the brow of the Vizcacha or Biscacho's burrow. Now it so happens that many years ago there was carried out a systematic extirpation of Vizcacha (*Lagostomus trichodactylus*), with the result that nowadays, to take our own Estancia, a Vizcacha is as likely to be found as the extinct Red Wolf or Aguará Guazú (*Canis jubatus*), whilst their erstwhile innumerable villages are fallen in and assimilated completely to the surrounding grass plain. With the Vizcacha went the Miner (for it found no little bank of any kind to excavate in, except an occasional bunker in the sand-hills); and without the Miner the Bank-Swallow lost the landlord in whose flat it had a reversionary interest. In the foregoing is another curious instance of the effects produced in the chain of Nature by tampering with one of its links or factors. [In my 1879 paper I erroneously alluded to this species as *Hirundo leucorrhœa*.]

The nest is placed in the chamber at the end of the passage or burrow, is built of dry grass, and lined with soft feathers. The eggs (of which I have taken five to the clutch) are laid towards the end of October; they are pure white and pointed. Unfortunately I do not possess the measurements.

38. *Tanagra bonariensis* (Gm.). Blue-and-yellow Tanager.

In my former notes I alluded to this species as *Tanagra striata*.

Mr. Grant expresses a strong belief as to its nesting in the district, but the fact remains to be proved. Generally it is scarcer in the months of October and November (so much I find from the long record in my diary). Equally true is it that both males and females were never entirely wanting during these months, in pairs or small flocks.

Iris blood-red; bill, above dark brown, below whitish; feet dark brown.

53. *Spermophila cærulescens* Vieill. Screaming Finch.

Until Mr. Grant recorded this species in 1909 and again in 1910 (when two nests were taken) I was only aware of its visits to this district by one specimen, a female, which I shot in the garden in May of 1899.

Mr. Hudson's description of the nest is deservedly eulogistic. One in my possession, of Mr. Grant's collecting, bears out his praise. It was situated in a shrub, in a clump of bamboos. Placed between five forked stems, it is wedged in position, not attached. Built of thin pale-coloured fibrous roots, cleverly interwoven; but so frail that it can be seen through, from bottom or sides. A few of the dead leaves of the stems sustaining it are ingeniously caught-in on the outside, and aid the disguise. Width: outside, $2\frac{3}{4}$ in., depth 2 in.; inside, $2 \times 1\frac{1}{2}$ in. The one egg is thin-shelled and blunt-pointed. Ground-colour dirty white, spotted with bluish brown (mostly towards blunt end, where a cap is formed) and a few black specks. Measurements: 18×12 mm.

54. *Paroaria cucullata* Lath. Cardinal Finch.

To my former notes I have only to add that the Cardinal also nests occasionally in an Elder tree or bush. In one such case, where the nest was only five feet from the ground, it contained the unusual number of four eggs, three being the normal clutch.

Adult. Iris reddish brown ; bill brown above, whitish below ; feet black.

Juv. Iris brown ; bill dark brown ; feet dark grey.

59. *Poospiza nigrorufa* d'Orb. et Lafr. Black-and-chestnut Warbling Finch.

This Finch is to be found about the woods, and occasionally in dry swamps or the coverts of "*Junquillo negro*" (*Juncus acutus*).

Though in evidence all the year round, singly or in pairs, it is not an abundant species. One summer, from 1 November, 1898, to 31 January, 1899, proved a singular exception. I find it recorded as "Unusually plentiful. Instead of the two or three strictly localised pairs of former years, it is to be seen and heard everywhere—in the woods, garden, sub-stations, thistle-beds, and swamps. Brown, the carpenter, had no difficulty in trapping some for his aviary, where they quickly became at home with his canaries. He described to me a peculiar habit of the male, which occasionally spreads its tail like a Turkey-cock" (I cannot personally confirm the last statement). It always has a tendency in its haunts to brushwood and weed-coverts.

The constantly-iterated song is pretty, though only consisting of a few notes, and is not unlike that of the Chaffinch. Frequently I have been aware of the presence of the bird, without actually being able to set eyes on it, owing to its secluded surroundings amidst the dense undergrowth.

The food in the crop I have found to be small beetles.

I confess the nest is very difficult to find. Two are described respectively in my notes as follows:—"Placed on the top of a little Tala stump, about a foot from the ground, among thick dry brushwood and weeds. Built rather slovenly of dry grass and plant stems, and lined with fine roots and a few horsehairs. Two eggs. 12th October, 1879." The second:—"Situated in a big thistle, about a foot from the ground, in an opening in a wood. Built of dry grass and lined with hair. Two (much-incubated) eggs

with one of *Molothrus bonariensis*. 1st November, 1881." The eggs are as described by Hudson :—"Of a pale bluish ground-colour, irregularly marked with black and very dark brown spots, and in some instances clouded with faint grey." I regret I have no specimens for measurements.

77. *Zonotrichia pileata* (Bodd.). Chingolo Song-Sparrow.

I have nothing of importance to add to my former notes. In the three last months of 1913 it was extraordinarily in evidence, owing to the great flood having driven it out of all the lower grounds. In the garden, consequently, the havoc it caused was of the very worst nature.

It will be of interest to watch the effects produced by the advent of its European congener, *Passer domesticus* Linn. (now, unhappily, established in our midst).

Passer domesticus Linn. Domestic Sparrow.

On revisiting the Yngleses in the summer of 1916-17, I found this undesirable alien firmly established at the head-station. In all the holes under the eaves of the buildings, and even in the boxes put up for the benefit of the Domestic Martin (*Progne chalybea*), were its nests to be found, whilst a considerable number roosted at night under the same eaves. None but a bird of this audacious species would systematically cling outside the cage of an innocent little Parroquet, suspended over the kitchen door, and shamelessly pilfer its sopped bread! Antonio, the gardener, was promptly despatched, with a flea in his ear and a wire hook in his hand, to drag out all the nests, and I was sadly ungrateful when he appeared at the office-door with a double handful of the familiar eggs and the solicitous query, "Did I want them for my collection?" It is much to be feared that all such efforts will be in vain, for I have it on record that Mr. Grant took a nest situated in an old nest of the Firewood-gatherer (*Anumbius acuticaudatus*). And in any case, a bird of such versatility and resource must necessarily baffle all ordinary means of repression.

The species was introduced into the Argentine somewhere

about a quarter of a century ago. Rumour has it that a well-known German brewer of Buenos Ayres longed for its familiar presence in the yards of his establishment, where grain was abundant. Anyhow, I was startled to recognize it high up in the decorative architecture of Calle Florida (the Bond Street of Buenos Ayres) in 1890. Since then it has spread all over the country, encouraged by the development of the grain production, and facilitated by the network of railways with their corresponding leakage from traffic.

Merely from method I add the description of the eggs:—Ground-colour dirty white, thickly spotted with dark ash-grey, increasing towards the blunt end. Measurements 21×16 mm.

83. *Embernagra platensis* (Gm.). Red-billed Ground-Finch.

Rarely or never seen about the woods, nor in the open plains. Always to be found in our "rincónes" amidst the great Pampa grass and Esparto beds, and in the equally vast "Junquillo negro" coverts of the neighbouring Tuyu estancia, occasionally in dry swamps in time of drought, and sometimes in a little jungle of the "Carda" (*Agave* sp.) which grows on the sandier soils.

The crops examined contained seeds and small beetles.

In qualification of Mr. Hudson's disclaimer, I have once seen it followed by a young *Molothrus bonariensis*, which it was feeding, and also have the record of a nest which contained an egg of the same parent.

It would seem to build rather late in the spring, in spite of pairing for life, the record of half-a-dozen nests ranging from 27 October to 20 November, mostly in the latter month. These are difficult to find, well-hidden and placed low in a dense clump of the particularly obnoxious "Junquillo negro," fairly well-built of dry grass and lined with finer material of the same nature.

The full clutch of eggs (undescribed by either Hudson or Grant) is three. There is considerable variation in these,

Sometimes white is the ground-colour, with very dark red-brown spots and streaks, nearly all gathered about the apex of the blunt end. Or the ground-colour may be of a pale warmish-yellow, with warm red specks, spots, and blotches, some violaceous sub-surface spots, and interlaced streaks of bright red-brown mostly at the blunt end, where they form a circle. The general appearance is bold and striking. Measurements : 25×18 mm.

87. *Chrysomitris icterica* (Licht.). Black-headed Siskin.

I deal fully with this species in my former paper under the name of *C. magellanica* Burm.

In nesting, the height from the ground varies from four to eight feet. Four is the predominant clutch (never exceeded). Only on one occasion have I found a nest containing both types of eggs, one being pure white, the other two of the delicately-spotted variety.

89. *Sycalis pelzelni* Sel. Yellow House-Sparrow.

It is impossible to improve upon Mr. Hudson's detailed description of this species. At best, I can only supplement it with a few details.

As a rule, it nests in the old abode of the Oven-bird, and in the woods here there are always many vacant homes of *Furnarius rufus*. The same statement applies to the Firewood-gatherer (*Amumbius acuticaudatus*); many nests, and many Yellow House-Sparrow tenants. I have also found it occupying the hole excavated by a Red-crested Woodpecker (*Chrysoptilus cristatus*). About the buildings, a hole in the eaves or a waterpipe provides it with a home. But, to me, the most curious site was the nest of a Rush-loving Spine-tail (*Phlæocryptes melanops*) suspended of course to some reeds in a swamp, and which it had lined with a little wool and hair. Another extraordinary case was where a pair of Oven-birds had built upon the "cigüeña" (the old-world stork or crane for drawing water) of a well, doubtless in the winter-time and when the well was not in use. When I saw it, at the end of November, the

occupants were a couple of House-Sparrows, and they seemed to be quite at their ease, though the "cigüeña" was being swung up and down by hand, for a couple of hours and twice a day, in order to fill the sheep-troughs.

I have taken eggs from the end of October to the beginning of February, November and December being the usual months. The clutches are three or four; one reached six. In ground-colour they are whitish brown, thickly marked with dark brown or brown and dark ash-grey. Measurements: 20×15 mm.

91. *Sycalis luteola* (Sparrm.). Misto Seed-Finch.

All the year round this species is to be found in flocks of from fifty to several hundreds, generally in the open plains or the paddocks, very frequently in dry swamps, and occasionally in a large opening amidst the woods. Some of these flocks are peculiarly local, and one may go with perfect confidence to a certain point day after day (or following a year's absence) and not be disappointed. But so well does the plumage harmonise with the surroundings, and so tame is the species, that its presence is generally not detected until the flock rises at one's very feet.

I cannot say that nests are numerous, though some years they are more so than others. And the season is late, from the middle of November to early in January, the majority occurring in December. The nest is well-hidden in a tuft of grass, but very frequently in a stunted clump of rushes at the edge of a dry swamp; generally in that case (though not invariably) it is raised a little above the ground. In structure it is cup-shaped, about $3\frac{1}{2}$ inches in diameter by $2\frac{1}{2}$ inches deep, outside measurement; sometimes well-built, at other times loosely. The outside consists of dry grass and roots, followed by a little moss, and it is lined entirely with horsehair; or, built of strips of dry rushes, and lined with a little wool, fine grass-stems, roots, and a feather or two. The full clutch of eggs is five, the more general number four. They are round rather than pointed as described by Hudson, fragile, and daintily tinted. Ground-colour white or

bluish white, thickly speckled and spotted with reddish brown. Sometimes these markings are generally distributed and large; in other cases small and delicate, or gathered in a ring at the blunt end. Measurements: 18×14 mm.

94. *Molothrus bonariensis* (Gm.). Argentine Cow-bird.

Since I wrote my former notes on this species, its habits, parasitical and otherwise, have been so well described by Mr. Hudson that further comment would be superfluous. From him I have learned that not only the pure white eggs found in so many strange nests are attributable to *M. bonariensis*, but also an endless variety of coloured specimens. Perhaps the principal characteristic which distinguishes them all is the thickness and strength of the shell, to which may be added the very round shape and glossy texture. Measurements: 22×19 mm.

The iris in the adult is very dark brown.

95. *Molothrus rufoaxillaris* Cassin. Screaming Cow-bird.

As in the case of *M. bonariensis*, Mr. Hudson has fully dealt with this species, and I have nothing worth adding to his notes.

The eggs are also round in shape, thick-shelled, and glossy, though in a less degree than the former. Ground-colour pinkish white, boldly spotted, marked and streaked with red and dark brown, increasing towards the blunt end. Measurements: 24×18 mm.

The iris in the adult is dark brown.

96. *Molothrus badius* (Vieill.). Bay-winged Cow-bird.

Again, when Mr. Hudson has said his say about *M. badius*, there is little to add.

It nests late with us, from the beginning of November to the beginning of January. Besides the localities mentioned by Mr. Hudson, I have found nests in a hole in a willow-tree in the garden, built of pieces of newspapers, string, and dry grass, and lined with horsehair; in an old nest of the Bienteveo Tyrant (*Pitangus bolivianus*), where it was

a well-built deep cup of dry fine rootlets; and in an ivy-covered tree, twenty feet from the ground. This last was an ill-concealed nest, loosely built of roots and grass-stalks, string, wool, moss, lichen, thistledown, etc., with no special lining, about six inches in diameter and four inches deep (outside measurement), rather shallow internally.

The clutch varies in number from four or five to as many as seven. The eggs are, again, thinner in the shell than those of the two preceding species, and are also less glossy. There is much variation in the colour of the clutches. Possibly the commoner type is represented by a pink ground-colour, spotted and marked equally all over with red and dark reddish brown, similar to, though not so bold, as in *M. rufo-axillaris*. Another clutch is of a white ground colour, boldly marked and blotched with dull reddish brown, increasing at the blunt end. A third is dirty greyish, spotted and blotched all over with pale brown. Yet another is merely whitish, densely marked with reddish brown. Measurements: 24×18 mm.

The iris in the adult is dark brown.

97. *Agelæus thilius* (Mol.). Yellow-shouldered Marsh-bird.

Mr. Hudson has again anticipated nearly all my observations.

For a Marsh-bird, this species shows a marked proclivity for the vicinity of buildings, and is also always to be found at the offal where the daily slaughter of cattle and sheep takes place. The larger flocks have sometimes a number of the Yellow-breasted Marsh-bird (*Pseudoleistes virescens*) associated with them.

The nesting-season is from late in October to early in December, most of the nests being found in November. They are placed generally in a dry flag-bed in a swamp (where they are sometimes abundant), or more rarely in a clump of "Junquillo negro." In both these cases they are either simply "lodged" in, or attached to, their dense surroundings, and about a foot to two feet from the ground.

Sometimes they are cup-shaped and compactly built, occasionally slighter. The material is invariably the same—dry strips of the flags or a certain other water-grass, lined with finer filaments of the same. I have only once found four eggs, the normal clutch being three. The ground-colour is a pale buff or a white with a pinkish glow, boldly spotted and streaked at the blunt end with a rich dark brown, almost approaching black. Measurements: 22×17 mm.

98. *Agelæus flavus* (Gm.). Yellow-headed Marsh-bird.

This is a curiously irregular visitor to our district. First observed in 1875, I recorded it every subsequent year to (and inclusive of) 1882. Since then, I am not aware of having seen it again. At the risk of being prolix, the following are the detailed appearances:—

- 1875. Nov. 30. Pair seen in a thistle-bed.
- 1876. July 27. Flock of seven or eight on the campo.
Oct. 5. Three on campo.
- 1877. June 4. Three or four on campo, in company with
P. virescens.
Oct. 1. A flock seen on campo, in company with
T. defilippii.
- 1879. Sept. 26. Flock of twenty to thirty on campo.
Nov. 20. A few in thistle-bed.
Nov. 22. Two flocks seen—one in thistle-bed, other
on campo.
Nov. 28. Some seen in township of Ajó.
Nov. 30. Two in a thistle-bed.
Dec. 7. Some in township.
Dec. 20. As above, and also on campo.
- 1880. Aug. 1. One seen on campo, in company with some
Plovers!
- 1881. Oct. 9. Flock of eight on campo.
Oct. 10. Same flock seen again.
Oct. 24. Two or three again, in above locality.
- 1882. June 10. Two seen near township, in company with
P. virescens.

Those seen in the thistle-beds in 1879 gave me the

impression that they were nesting. From my notes I gather that all these cases were confined to the more eastern parts of the estancia Los Yngleses, none passing further inland: from which I deduct that they must either have migrated following the littoral, or crossed boldly over the mouth of the estuary of the River Plate from the Banda Oriental. It also is to be observed that these occurrences synchronize with the southern range assigned to the species by Hudson, namely, the thirty-sixth degree of latitude.

Referring to their association with the Yellow-breasted Marsh-bird (*Pseudoleistes virescens*) and De Filippi's Marsh-Starling (*Trupialis defilippii*), I remember how, riding home one evening, I came across a large gathering of the three species. The grass of the campo was short, turf-like, and emerald-green. The birds in consequence stood out in relief upon it, and the rays of the setting sun brought out all the brilliant hues as of a most brilliant carpet.

Mr. Hudson describes the nest and eggs.

In another paper of my own ('The Ibis,' July 1885) will be found similar details regarding a small nesting-colony near Paisandú, in the Banda Oriental.

99. *Agelæus ruficapillus* Vicill. Red-headed Marsh-bird.

Mr. Grant chronicles the only record of this species (Bull. B. O. C. xxv. p. 114, 1910). A female was obtained by Miss Runnacles in the swamps.

100. *Leistes superciliaris* Bp. Red-breasted Marsh-bird.

Adult.—Male: Iris brown; bill black (upper ridge of lower mandible white); feet black. *Female*: Iris brown; bill—upper mandible dark brown, lower one pale horn-colour; feet pale horn-colour.

In effect this very beautiful species has only appeared twice in our district, in the summer of 1901 and that of 1916. In considerable numbers on both occasions, and nesting. Also, these were epochs of much drought, here as elsewhere.

The first-named year I found it in a large paddock of

lucerne at the neighbouring Linconia station, to which field and a similar patch or two of lucerne it was confined (the campo proper being very bare). The date was 28 October. On 22 November I again saw several, but was not successful in finding a nest. Mr. Runnacles, the manager, told me that the lucerne-mower had revealed some nests, generally situated in the foot-print of a horse. I am not aware when it disappeared from Linconia.

On 20 December, 1916, immediately after my return to the Yngleses, I was surprised to see three males not far from the head-station, in a small dry swamp and grass-covert. Another male I found the same day, about two miles away, in the weed-grown garden of an unoccupied rancho (as in 1901, the campo was again very bare and no water anywhere). But it was not till the 5th of January, when I happened to have occasion to look over a new lucerne-field (but which contained nearly as much of the original grasses and herbage as lucerne, and had absolutely been undisturbed by stock or intruders), only a quarter of a mile from where I had observed the three males a fortnight previously, that I was pleased to find a large number, from twenty to thirty, males and females. Mr. Hudson has fully described the habits of both sexes, to which I can only offer my corroboration. The situation was a most ideal one as regards vegetation and shelter, and had been undisturbed all the spring until the mowers began to cut the principal patches of lucerne in January. Unfortunately, as can be gathered, I was somewhat late in my investigations for nests. The scythe-men found two for me: the first contained three fully-fledged young, which promptly decamped and were taken charge of by their parents; the second had two eggs, too far incubated for preservation. Both nests were mere linings of fine rootlets to a hollow in the ground. The flock or colony was still in evidence when I left the Yngleses about the end of January.

Eggs bluish white, spotted with reddish brown, increasing towards blunt end. Measurements: 24×17 mm.

101. *Amblyramphus holosericeus* (Scop.). Scarlet-headed Marsh-bird.

My former paper gave a full account of this handsome species, and the interval has not furnished me with much new material. I think it has increased in numbers, which may be attributed to the further cultivation of small plots and fields of maize in the district. It is now much more frequently observed in the woods—perching, not feeding. At the end of June 1899 I saw a flock, which must have numbered from eighty to a hundred, on the sandy ground near the head-station; even in a maize-field, at the end of autumn, I have never seen a similar gathering. These remarks do not apply to the nesting-pairs in the swamps, which continue to be few, and are very local and faithful to their habitat, frequenting the deepest and loneliest of the larger swamps. Probably we are now favoured, or cursed (for it is very destructive to the maize) with the incursions of various migratory and predatory flocks.

The nests are no longer a rarity to me, now that I know where a pair of birds are likely to be found, after which it is only a matter of quartering the flag-bed, guided by the agitation of the parent-birds. I have found them from the middle of November to early in January (late breeders, as is to be seen). In situation and material the formula is curiously alike. It is built into five or six "Durasnillo" stems (*Solanum glaucum* Dunal), about five feet from the water, in a flag-bed of the deeper swamps; rather deeply cup-shaped and fairly compact; built of stems of the "Junco" rush (*Scirpus riparius* Presl) and water-grasses, and entirely lined with wiry or narrow strips of flags. Birds generally hover about, or alight close to the intruder, repeatedly uttering their sweet plaintive note.

The full clutch of eggs is three, though I have taken one of four. The ground-colour is pale blue, some with hardly a mark at all. More generally there are a few black specks, some lilac sub-surface spots, and a few strong black markings and streaks, mostly towards the blunt end. The egg

is somewhat like the bird—of a strong personality. Measurements : 26×19 mm.

102. *Pseudoleistes virescens* (Vicill.). Yellow-breasted Marsh-bird.

Iris red-brown ; bill and feet black.

Mr. Hudson has so fully dealt with this abundant species that my own notes contain nothing novel, beyond some additional nesting-notes.

It begins to build here as early as the middle of August, and makes no attempt to hide the fact from any intruder ; indeed, the birds absolutely draw attention by their loud clamours and the consequent concurrence of others of the same species. The work of construction goes on so leisurely that the nests are only half-built by the middle of the month and the first eggs not laid before the 25th of September. From the middle of October to the end of November constitutes the general epoch, an occasional clutch occurring in the first week of December.

I have found a few nests in dry swamps amidst the rushes and weeds about a foot and a half from the ground, and an occasional one in a thistle-bed. But it is essentially a wood-builder. The selection of a Tala-tree is so exceptional as to prove the rule that an Elder-bush is invariably preferred, and the nest is therein situated at a height of about six feet from the ground, the two extremes being two and ten feet. I have on record an extraordinary aberrant case of a nest in a tuft of grass in an open paddock, though quite close to the woods, taken on the 3rd of December. The nest was rather a special one in every way, and I may be pardoned for describing it *in extenso* :—Cup-shaped, rather compact and extremely solid, measuring outside $5\frac{1}{2}$ in. across by 4 in. deep, inside $3\frac{1}{2}$ in. by 3 in. ; built of dry grass, stems, and roots, with a base of extremely hard mud extending half-way up, sparsely lined with dry rootlets, and a good many green stems of a hard wire-like grass. Clutch of four eggs.

The formula of nearly a score nests reads as follows :—Built of dry grass and plant-stems and wool, followed by a

plastering of mud, lined with horsehair and fine roots. Four eggs is the general clutch, but I have taken several of five and, more rarely, even six. Probably the losses inflicted by various parasitical birds militate against the higher number.

The egg is a very handsome one, when seen by itself, and not to be confused by the *omnium gatherum* of its many parasites (I have a vague recollection of a nest containing thirteen eggs, not one of which was of legitimate pedigree!). Rather long-shaped, white ground-colour, but clouded reddish, and with large rich reddish-brown spots and blotches, heavier towards the larger end, where they sometimes become confluent.

Measurements of much variation: Largest clutch 30×20 mm., smallest 25×19 mm. General average 28×20 mm.

103. *Trupialis militaris* (Linn.). Patagonian Marsh-Starling.

104. *Trupialis defilippii* Bp. De Filippi's Marsh-Starling.

These two species are dealt with at length, in their range and general habits, by Mr. Hudson. In his turn, Mr. Grant has established the residence of the first, and the autumnal visits of the second species to this district.

T. militaris nests on the ground in long grass, and the nest is built of dry grass.

The three eggs which constitute the clutch are striking in appearance. Ground-colour white, suffused with purplish spots, and marked with large red-brown blotches and tracings.

Measurements: Largest clutch 30×19 mm.; smallest 26×19 mm. General average 28×19 mm.

111. *Myiotheretes rufiventris* (Vieill.). Chocolate Tyrant. Extremely rare in this district. From 1872 to 1898 I may have seen perhaps half-a-dozen solitary individuals

in the winter-time. On 12 August of the last-mentioned year I saw a flock of five in the outskirts of Tapalqué, a small town in the Azul district, and I only mention the fact (unconnected with Ajó) as being the only instance of a flock observed, *versus* our single visitors. Mr. Grant got one specimen in January 1908, but personally I do not recollect having seen any more in Ajó since 1898.

The bird is an anachronism, and, apart from its rarity, its peculiarities have always had a fascination for me. "What is this huge and lonely Thrush?" I would ask myself on each occasion, as it unexpectedly came under my notice in the open campo. And the next moment, as it took to flight, "Thrush! No, a Plover, and of the most striking and swiftest kind!" Finally, on going home and turning up my references and diary, it cost me a mental effort to reconcile the identification with a member of the Tyrant family.

112. *Tænioptera nengeta* (Linn.). *Pepoaza* Tyrant.

The only record of this Tyrant is that by Mr. Grant—one solitary male—on 29 October, 1908.

114. *Tænioptera dominicana* (Vieill.). Dominican Tyrant.

As stated by Mr. Grant, this striking species is only to be found in the "rincónes," the wild lonely land of coarse grasses and saltwater creeks, or on the outskirts of the same. On the plains proper I have never seen it—for example, on the remainder of the Yngleses estancia. Nor is it likely to be overlooked, with its most conspicuous plumage of snowy-white and jet-black, perched on the highest plant possible. In its proper haunts—the "rincónes"—I have observed it all the year round, though more frequently in the winter months—generally individual birds, and occasionally a pair (these latter only occurred in the winter, which goes to confirm Grant's opinion that it does not nest with us). Two pairs have been the most seen in one day. It is exceedingly wild and difficult to get within gunshot of, and I never have been near enough to distinguish its note.

125. *Sisopygis icterophrys* (Vieill.). Yellow-browed Tyrant.

Iris dark brown.

Since I wrote about this species in my former paper, it has undoubtedly become more numerous. In June, July, and August it is only occasionally seen (though since 1880 I have actually recorded it in all these months), and I should have difficulty in absolutely establishing its arrival in spring or departure in autumn.

Besides the woods and (of late years) the garden, it is sometimes found far afield—amongst the “Durasnillos” at the edge of a swamp or in a bed of “Cardas.” The short low whistle, its only note, on the nest being approached, has been mentioned by Mr. Hudson. In the crop I have only found small beetles.

A goodly number of nests noted, range from 3 October to 7 December, nearly all of which appertain, however, to the first-named month. In the Tala tree, the end of a branch is selected; in a Poplar or Elder, it is placed next the stem. I have known of one only four feet from the ground, and another at a height of twelve feet; seven or eight feet is, however, the general average. The outside material consists of twigs or dry grass-stems and a little wool or moss; the lining of fine roots, horsehair, and often a few light feathers. The whole constitutes but a slight structure. I have two clutches of four eggs, the usual number being three.

The ground-colour of the eggs is a warm yellowish white, marked with a few large dark red spots, chiefly at the larger end. Measurements: 21×15 mm.

131. *Lichenops perspicillatus* (Gm.). Silver-billed Tyrant.

To my previously published notes on this species I have nothing to add, but somewhat to take away.

Subsequent dissection taught me that the rufous birds were not necessarily females, as I had formerly surmised.

Secondly, my description of the nest and eggs is, by a clerical error, totally erroneous and misleading. Mr. Grant

gives the correct account of the former, but omits the description of the eggs. These are of a pale yellowish ground-colour, with some large spots of dark red at the larger end. Measurements : 22×16 mm.

132. *Machetornis rixosa* (Vieill.). Short-winged Tyrant.

Mr. Hudson describes very fully some of the principal characteristics of this species. It is certainly a tyrant amongst the Tyrants. I have seen it attacking and pursuing birds which are themselves bullies—the Spur-winged Lapwing, the Bienteveo Tyrant, the Calandria Mocking-bird, and others. On these occasions, it may perhaps elevate the brilliant crest, but this display is singularly rare. It is frequently to be seen at carrion, fly-catching, and also following the plough. Livestock attracts it, for the sake of the insects found in their vicinity ; and it is a wonder how the birds escape being trodden on, such is their familiarity. Our large open patio, with its closely-worn turf, is a favourite haunt ; there I have seen a family group of six, all running swiftly about or making short springs into the air, to capture flies and beetles ; and I have often passed within two or three yards of others without alarming them.

The nesting-habits are eccentric, for it would generally seem to seek the shelter of a Parroquet's abode (*Bolborhynchus monachus*) or that of the Firewood-gatherer (*Anumbius acuticaudatus*)—perhaps an old or abandoned habitation—sometimes fifteen or twenty feet from the ground. The period ranges from early in November to end of December. The nest itself is built of light twigs or dry grass, and lined with fine rootlets, horsehair, and a few feathers. Four eggs constitute the usual and full clutch.

The eggs are brownish or reddish white in ground-colour, densely marked with rich chocolate-brown, or dark brown and ash spots or stripes, running uniformly from the blunt to the small end. Measurements : 24×18 mm.

136. *Centrites niger* (Bodd.). Red-backed Tyrant.

Mr. Hudson and Mr. Grant describe all we know about this species, which makes its appearance in our district in January (viz. the middle of summer), from the 3rd to the 31st, usually in the latter half of the month. By February it is very abundant and generally distributed. In July it proceeds to take its departure again, though a few remain through August and so late as 7 September. Generally, it is shy of pedestrians, though I have known one exception, when the bird repeatedly let me approach within three yards before taking to flight.

141. *Haplocercus flaviventris* (d'Orb. et Lafr.). Reed-Tyrant.

Iris brown ; bill dark brown ; feet black.

This dainty little Tyrant comes to us in October and leaves again in April. Its habitat is invariably the grass-coverts of dry swamps and the great beds of "Junquillo negro" on this and the neighbouring Tuyu estancia, and consequently it is not easily detected or observed. It possesses a sweet clear call or note, as detailed by Mr. Hudson.

The nesting-season is from the middle of November to the middle of December. The nest, which is not easily found, may either be attached to a few "Durasnillo" or rush-stems in a dry swamp, or in a dense clump of "Junquillo negro," at a height from the ground of a few inches to three feet, more generally two feet. It is well and comfortably constructed of fine dry moss, and lined with delicate dry grass and a few feathers. I have never found a clutch of more than three eggs, and two is not an infrequent number.

The eggs are cream-coloured, and measure 18×14 mm.

146. *Serpophaga subcristata* (Vieill.). Small-crested Tyrant.

I would not call this species an abundant one in our district, and the records in my diary all these years are not

conducive to simplicity. I find it noted in all the winter months, whilst some summers I specially state that none at all have been observed.

The latter part of October and the first half of November constitute the nesting-season, to judge from the half-dozen nests which have come under my notice. These were situated in an Elder bush, a young "Coronillo" tree (*Scutia buxifolia* Reiss.), or a thorn bush, all about three feet from the ground. In form compact and rather deep, they are built of lichens with some fine grassy filaments and a horsehair or two, and lined with feathers. Three is the full clutch of eggs.

The eggs are bluff-pointed, of a pale yellowish buff or cream-colour, and measure 15×12 mm.

147. *Serpophaga nigricans* (Vieill.). Blackish Tyrant.

Iris dark brown; bill and feet black.

More frequently observed than the previous species, and not so strictly confined to the woods. It may frequently be seen about the buildings of the head-station, in the neighbourhood of the water-tanks and feed-tubs; and is equally at home amongst the rushes of a swamp.

It nests from the middle of October to the middle of November, and the sites selected are curiously varied. In an Elder tree or bush, at any height from three to twelve feet; suspended below the eaves of a house; in a hanging flower-pot in a verandah; hung underneath the timbers of a bridge, or built into the top of a "Durasnillo" growing below; placed between a vine and the iron netting of a window; and "down the side of a well," as instanced by Mr. Grant.

As a rule, the small nest is very neat and compact, and rather deep. The materials embrace moss, wool, dry grass and plant-stems, fine roots, and spider's-webs—all quilted together; the lining consists of fine feathers.

Three is the usual clutch of eggs. These are yellowish buff or cream-colour; unspotted, and not glossy. Measurements: 18×14 mm.

150. *Cyanotis azaræ* (Naum.). Many-coloured Tyrant.

Iris delicate pale blue; bill and feet black.

There is little further to add to my previous notes and those of Mr. Hudson on this species, to which the name of Tyrant seems so misapplied, in view of its miniature beauty, tameness, and sweet clear call.

As stated by Mr. Hudson, it is only occasionally seen during the winter months, the majority having migrated. A drought does not necessarily drive it away; for example, the autumn of 1902 found all our swamps completely dry, notwithstanding which, I continued to observe as many as seven or eight in one locality towards the end of March. On the other hand, when the great flood of 1913 took place, I did not see a single specimen on my journey from Buenos Ayres to Ajó at the end of September. Nor in any of the Yngleses swamps until 10 October, when, boating in the deepest localities, a great many were seen (generally pairs); rarely was it observed subsequently; and at the end of summer (30 March) I record the curious fact that during all the season only an occasional one was seen. "Certainly not for want of water on the estancia," is my rueful comment.

The following are the measurements of a very neat nest:—Outside, 2 in. (50 mm.) wide by the same in depth; inside, $1\frac{5}{8}$ in. (41 mm.) wide by the same in depth. Which shows the delicate compactness of the moulded walls and the fineness of the vegetable strips constituting the lining. It was attached to one single slender "Durasnillo."

Cyanotis azaræ is a late nester, from the end of November to the beginning of January. The eggs never exceed two in number, and are of a pale cream-colour, which darkens toward the blunt end and occasionally merges into a faint brownish ring there. They measure 17×13 mm.

152. *Elainea albiceps* (d'Orb. et Lafr.). White-crested Tyrant.

The only recorded occurrence is that of an adult male obtained by Mr. Grant on 18 January, 1909. There is

another instance of a pair (if my correspondent is correct in his identification), the nest of which was obtained on 26 November, 1910. My correspondent's three eggs are pure white and pointed, and measure 25×17 mm.

158. *Pitangus bolivianus* (Lafr.). Bienteveo Tyrant.

I have only a few nesting-notes to add to my former account of this species. To show its familiarity or indifference to man, one nest was placed in a small lemon-tree just outside my bedroom window and adjoining the patio; another on a gate-post (far removed from house or tree), where there was considerable traffic. Four nests have come under my observation, which were built on the ground in the open campo, and, being only "backed-up" against a tuft of grass, were naturally very conspicuous; three of these were close to the woods of the head-station, the fourth only a short distance from an abandoned rancho with a considerable number of trees. So it is difficult to assign any reason for such a curious departure.

162. *Pyrocephalus rubineus* (Bodd.). Scarlet Tyrant.

I have nothing to add to my own and Mr. Hudson's notes. The year of 1913 (that of biggest flood ever known all over the Province) was marked by a great incursion of this lovely Tyrant. "More abundant and generally distributed than any previous year," I find myself writing at the end of October. Mr. Grant's observations on the moult are interesting.

The nest and eggs have been fully described. The latter measure 17×13 mm.

170. *Tyrannus melancholicus* (Vieill.). Melancholy Tyrant.

On 5 January, 1902, I saw a pair of this species. In his two visits to Ajó, Mr. Grant chronicles four observed, between 29 December and 12 March, and alludes to its rarity as a visitor. About the middle of January 1917, I found a pair frequenting an orchard at the Yngleses head-station.

These were exceedingly shy and silent; but my opportunities were too limited for extended observation. In the course of past years, I was aware of having rare glimpses of a bird which could only have been of this species, but its wildness and swiftness had hitherto always baffled my being sure of the identification.

171. *Milvulus tyrannus* (Linn.). Scissor-tailed Tyrant.

Such a striking species as the Scissor-tail is sure to have its habits fully described, and consequently my former paper, along with that of Mr. Hudson and Mr. Grant's notes, affords a fairly complete account of what is known.

Its earliest chronicled appearance in Ajó is, I find, on 11 October; but it does not become abundant until the end of that month. The last departure occurs towards the end of March. I agree with Mr. Grant that the spring immigration is initiated by the males, but the rule is not absolute; for, on one occasion, whilst lying becalmed in a sailing-ship on a sunny morning off the town of La Plata, on 17 October, I noted the advent of a pair, flying low, coming from the Banda Oriental, and which were subsequently followed by a single male. In the summer of 1913-14, when our district was so greatly flooded, the species was extraordinarily abundant.

The nesting-notes require no addition, beyond the rectification of my former dictum that the number of eggs never exceeded three; as a matter of fact, four is not uncommon. These have been fully described. They measure 22×16 mm.

176. *Geositta cunicularia* (Vieill.). Common Miner.

"Send me some eggs of the Common Miner," was the request of Dr. Eagle Clarke, on behalf of the Edinburgh Museum, a good many years ago. Alas, the Miner is common no longer in this particular district. As described in the present notes on the Bank-Swallow (*Atticora cyanoleuca*), the extermination of the Biscacho (*Lagostomus trichodactylus*) on these level and bankless

plains has deprived both species of birds (one of ground and the other of aerial habits) of any possible nesting-sites. It is only necessary to refer to my former paper to realize how greatly the Miner is missed in the campo, where every larger Biscacho-colony, of the many thousands, had its pair of these birds (as well as the Burrowing Owls), and their familiar and lively presence constituted a source of interest and pleasure to the wayfarer.

In consequence, for many years past I have been in the habit of chronicling the presence of two or three pairs at certain favoured localities on sandy roadways, where the action of wheeled-traffic and the winds combined had left little cliffs two or three feet high, and the surrounding terrain was bare or close-cropped; for it must be noted that the Miner passes all its time on the ground and does not affect concealment. Even those now alluded to were not in evidence during a brief visit I paid to the Yngleses in the spring of 1915, nor in the previous summer of 1914. Further, in the last-named year I observed none on the long sandy coast-route to the Montes Grandes in the south, nor on the equally long journey to Dolores in the west. On the other hand, a few pairs would seem to have found a refuge on some of the large canals constructed of late years for the drainage of this part of the Province. As the banks are, however, generally shelving, there are few sites which afford the necessary security for nesting-burrows. Mr. Hudson has fallen into what is probably a clerical error, when he indicates "the side of the deep pit-like entrance to one of those burrows (*i. e.* of the Biscacho) for the bird to bore its cylindrical hole." It is invariably the front or brow which is selected, a position admirably adapted to provide security against intruders or molestation from further excavating action on part of the Biscacho. My excuse for the extension of these remarks must be the possible total disappearance of the once Common Miner from this district.

The nesting-notes have been detailed at length by Hudson and myself. I may add that, in former years, I have seen a freshly-excavated burrow in a sand-bank on 1 June

(practically early in winter) and another on 25 July (mid-winter). The usual clutch of three—according to Hudson, five—eggs are pure white in colour, and the measurements average 24×18 mm.

178. *Furnarius rufus* (Gm.). Red Oven-bird*.

Hudson supplements my former notes by a still fuller life-history of the Oven-bird, written after his usual graphic and interesting manner. There remains, therefore, but little for me to add at the present date. It is needless to say that the great four-years' drought of 1908–11 was particularly disastrous to this species; the iron-bound soil was nonproductive of the usual food-supply of larvæ and insects, and water was only to be found at the troughs of the cattle-wells, in the immediate neighbourhood of which were constructed the only possible nests. It cannot be said the number of individuals showed any marked diminution, but all building-operations were necessarily suspended. Subsequently, I was struck with the prompt resumption of work on the return of normal conditions. This observation is applicable to every more than usually dry summer, followed by the March rains. The first shower has probably not ceased falling, when the birds may be seen busily employed making and carrying mud-pellets; their activities being accompanied by a most vociferous chorus of satisfaction and mutual congratulation. With the occurrence of the equally great three-years' flood of 1913–15, the situation underwent an extraordinary reversal. The flood began in the winter-time, and by 3 October I find myself struck by the wonderful number of birds and of completed nests. These latter were situated everywhere—in trees in woods and gardens, on gates and posts of fences, buildings, etc. One on the window-sill of my dressing-room (constructed before I went into residence) was an endless pleasure to me,

* The Sociedad Ornitológica del Plata, founded in Buenos Ayres on 28 July, 1916, has adopted the vernacular name of this species as the title for its Review. And the cover of 'El Hornero' is accordingly adorned with a vignette of these birds and their interesting nest.

during the period of incubation and until the young ones were reared and left. Since 1879, when I recorded two nests built on the ground, I have met with only one similar instance; and this, again, was situated within a hundred yards of a Tala wood.

Mr. Hudson places the clutch at five, but I have never found the number to exceed four. The pure white pear-shaped eggs average 28×22 mm., with great variation.

180. *Upucerthia dumetoria* (Geoffr. et d'Orb.). Patagonian Earth-creeper.

I have but one recorded occurrence of this Patagonian species—a male bird shot in the woods of the Yngleses head-station, in July 1899.

183. *Cinclodes fuscus* (Vieill.). Brown Cinclodes.

Of uninteresting habits and appearance, and uncommunicative manners, the Brown Cinclodes is a winter migrant from the south, arriving in this district about 20 March and taking its departure towards the end of October. By the end of April it is abundant, generally singly, but sometimes in pairs, and I have seen one lot of four or five; otherwise it is strictly non-gregarious during its stay with us. A "restless, silent, unsociable bird" is the consensus of my notes; frequenting the ground where the grass is short, also sheep "rodeos" (muster-grounds) and muddy roadways, and often found in the woods. It perches occasionally on a low tree, a post, or a "durasnillo." It is not at all shy, and I have approached, or been approached by it, within a distance of two or three yards. In gait—the short run and flirting of the wings—there is a certain resemblance to the Wheatear (*Ænanthe ænanthe*), though without that bird's attractive sprightliness. The little used voice is at best a mere chirp or twitter.

188. *Phlæocryptes melanops* (Vieill.). Rush-loving Spine-tail.

Perhaps there is no species of bird so reminiscent of our swamps to one acquainted with them as this species. To the

observer—whilst ensconced comfortably in a canoe, engaged pontooning out sheep in flood-time, or “egging” on horse-back or laboriously thigh-deep on foot—there comes at frequent intervals the long cricket-note call, followed by the crackling taps and creaks, which herald and accompany the advent of the bright-eyed little proprietor of each particular small domain. Creeping from stem to stem of the fluted dark green “junco,” generally close to the surface of the water (and as often as not head downwards)—itself a harmonious study in blacks, browns, and greys,—it approaches within a few feet of the intruder, rapping out little quaint oaths and protests, and is only to be appeased by the withdrawal of the disturber of its solitudes. To it, on these occasions, sometimes comes the Many-coloured Tyrant (*Cyanotis azaræ*), as similarly described by Mr. Hudson; but the latter little beauty always struck me as being more coquettishly disposed than resentful, and frivolously disinclined to take the Spine-tail’s serious view of the situation.

Mr. Hudson has anticipated me in the fuller description of its habits. In this locality the migration is not absolute. Some years I have observed it until the end of June (more by token, one flew in at the sitting-room window at night, on 4 June, 1893) in no inconsiderable numbers; though I admit July has always been a blank. By 15 August it is recorded again, and even a completed nest on the 24th of the same month; whilst by 20 September many nests are nearly finished. All of which points to a but partial, or at the best general, migration. On the other hand, when the great flood began in the winter of 1913, I observed absolutely none during all my travels, until one or two appeared early in October. It was singularly scarce all the spring and summer (except during the one month of January), and when I revisited our district at the end of August 1915, under similar inundated conditions, I do not think I saw a single individual between Buenos Ayres and the Yngleses, or on the latter itself.

It is only necessary to supplement Mr. Hudson’s nesting-

notes by stating that I have never been able to corroborate his one and interesting instance of a nest which had a stopper, or hinged doorway, to the orifice. In this locality eggs are to be found from the beginning of October to the middle of December. Only once has the clutch reached four, three being the usual number; indeed, I have several cases where only two were being incubated. In colour these are as described by Hudson, "of a bright, beautiful blue, sometimes with a slight greenish tinge." They are somewhat pear-shaped, and measure 21×16 mm.

In the bird, the iris is dark brown; Claude Grant calls it hazel, and Hudson is silent on the subject. My notes describe the bill as black or very dark brown; Grant says brown, yellow at gape and base of lower mandible; Hudson, pale horn-colour. Further, I characterize the feet as being sometimes horn-brown, dark slate-grey, almost black, and black; Grant, ashy; and Hudson, pale horn-colour.

189. *Leptasthenura ægithaloides* (Kittl.). Tit-like Spine-tail.

This graceful little species has been previously described by myself and by Claude Grant from the Ajó district, and by Hudson in its more general range. Reference to my diary since 1879 leads me to modify my former appreciation as to its abundance locally. It is not exactly common, though coming under occasional observation; singly, in pairs, and (in the months of May and June) as many as two or three pairs noted in one day—perhaps the absence of foliage in the winter time allows it to be more easily noticed. I have not unfrequently found it in such an unexpected situation as the weed-jungle on the outskirts of a dry swamp, some distance from any wood.

The nesting-habits have been sufficiently dealt with. Hudson puts the clutch as high as five or six; my own experience is three, only once four. The eggs are white in colour, slightly pointed, and average 19×14 mm.

Iris dark brown ("hazel," according to Grant). Bill dark brown or black ("blackish, pearly at base of lower mandible,"

Grant; "horn-colour," Hudson). Legs and feet greenish yellow or olive ("horn-colour," Hudson). I shot a specimen once, the feet of which had the appearance as of some yellow pollen or sulphur adhering to them.

201. *Synallaxis sulphurifera* Burm. Yellow-marked Spine-tail.

Personally, I have no notes of my own upon this species. Hudson gives a brief notice, as does Claude Grant, who states it is fairly common in our district. Specimens which have been brought me were shot in the grass-coverts of dry swamps.

Hudson quotes Durnford in connection with the nesting-habits, and Grant's account is similar. Two eggs in my possession were taken on 21 November. They are rather round, pure white, and measure 19×15 mm.

203. *Synallaxis hudsoni* Sel. Hudson's Spine-tail.

It is more than natural that I should have little to add to Hudson's account of the Spine-tail which bears his name. And, to be frank, it is a species which, though quite common, does not lend itself to mere cursory observation (see Hudson and also Claude Grant). Where these two past masters emphasize its skulking and timid habits, I may be pardoned for merely referring to their *obiter dicta*. As far back as 1883 I sent Mr. Salvin a couple of skins, collected three years previously "in dry durasnillo-beds"; and since then many specimens have passed through my hands. But I am reduced to stating that I know it when I see it (a compliment which it does not show much tendency to reciprocate), and that I have never yet succeeded in finding a nest.

The nesting-period, from some half-dozen authentic cases furnished me, seems to occur rather late in the season—8 November to 27 December. Four is the largest clutch, three being apparently the general number. Hudson places it at five.

The eggs are sometimes pure white, in others there is a tendency to a creamy colour or pale buff. They are bluntly pointed, and average 22×17 mm.

204. *Synallaxis maluroides* d'Orb. Wren-like Spine-tail.

An abundant species in "rincones," where the immense esparto beds constitute a safe refuge from birds of prey; also generally distributed in the vicinity of swamps, wherever there is a dense growth of either dry grass or wet weeds; but entirely absent on the plains. During the great flood of 1913-15 it practically disappeared. It is of feeble flight, and only on evidence when disturbed by the rider, and it flies a few yards. On these occasions the horseman is sometimes accompanied by an attendant Harrier (*Circus cinereus*), but I never saw a capture achieved, in the course of many attempts. One day, in the course of a very high wind, the helplessness of these little birds was very obvious; no sooner did they rise out of the esparto than they were put down again, and one was actually driven against my knee or saddle.

I am inclined to agree with Mr. Hudson that it has a partial migration, as I have found it scarcer in the colder months.

Personally, I am ignorant of its breeding-habits. In vain, on innumerable occasions, in the spring and summer, have I pulled out and dropped my handkerchief when a bird rose at the horse's feet; the subsequent search amongst the esparto, for many yards round, has always been unsuccessful.

Hudson describes the nest as "a slight open structure of grass lined with a few feathers, and placed in a tuft of grass or weeds; the egg pure white in colour." Claude Grant's one and only clutch of three eggs had "a mere bedding of dry grass with a little wool and thistle-down, placed on the ground in a dry part of the swamp." The three eggs—taken on 2 January, 1909—are of a broad-oval shape, pure white, and slightly glossy. They average 17×14 mm.

206. *Anumbius acuticaudatus* (Less.). Firewood-gatherer.

The "Leñatero" or Firewood-gatherer is exceedingly common, and its nests, new and old, are to be found everywhere except in the heart of a wood; where, as

Mr. Hudson explains, the birds would be handicapped in rising with their building-material of small but rather long sticks. But the trees bordering the woods, and particularly isolated clumps or individual stunted *Tala* trees (though only five or six feet high) have all from one to three or four nests, a fresh one being built each season or the old one repaired; and in view of the size of these, and the thin foliage of *Tala celtis* (or in other cases the poplar), they are particularly conspicuous. There are three species of birds whose nests do not require to be sought, for in number and prominence of feature they positively "throw" themselves at one; namely, the Firewood-gatherer, the Bienteveo Tyrant (*Pitangus bolivianus*), and the Red Oven-bird (*Furnarius rufus*). In material they are extraordinarily divergent, and might be typically described as "a pile of sticks," "a rag-bundle," and "a mud-pie."

Telegraph-posts are a favourite site for the Firewood-gatherer's nest, and on many stretches of the railway the traveller in the train wonders if there is actually a nest to every post, or if he is obsessed by the same one post and nest—a freak of the eye's retina. At one bran-new station on a southern railway-line, the company had planted an equally recent row of silver-poplars just outside the wooden railing which guarded the platform; these were not more than six or seven feet high, and in the featherduster-top of one of these methodically-pruned saplings, I was amused to find a pair of "Leñateros" with a nearly completed nest, quite regardless of train-traffic and passenger concourse. In parenthesis again, I should like to state how railway-stations in the Pampa territory (and doubtless in other similar parts of the world) play an interesting and important part in the development and protection of bird-life. As plantations spring up, the necessary covert and nesting-sites are provided; whilst the overflow from the accompanying wells and water-tanks supplies another necessary element of life. During the great four-years' drought of 1908-11, the latter feature was particularly noticeable.

The look-out ladder in the Yngleses patio has generally a

Leñatero's nest wedged into two of the cross-spars near the top, making further ascent difficult; I have also found a nest in an old bucket, which happened to be hung on a post. I have an impression that the nest of this species is haunted by an evil-looking fly, which I have never observed elsewhere—somewhat larger than a house-fly and yellow-banded.

The nest itself is fully described by Hudson. Those I have examined were chiefly situated in small Tala trees, at about six or eight feet from the ground, and were selected for that reason, as being easily bent down for the purpose. The spiral passage is both narrow and thorny, hence my usual procedure consisted in cutting through into the base, where the egg-chamber is to be found; by doing so with care, the damage is not irreparable, in case of there being no eggs or the alternative of nestlings.

In this locality, building begins as early as 15 August; what would seem to be repairs of old nests, not till the beginning of October. It must be borne in mind that the nest and its tree constitute the headquarters of the life-pairing birds. Frequenting the open bare campo, in a radius of a very few hundred yards, they make a straight bee-line for home on being disturbed, to the accompaniment of their rolling note "chic-chic-churrrr."

Eggs are laid from 3 October to early December, the first month embracing the general period, which, for the builder of a structure of this nature, seems undoubtedly early, if it is borne in mind that the Green Parrakeet (*Bolborhynchus monachus* Bodd.)—also a chamber-nest twig-builder—does not lay until the end of December. True, the latter does not line its abode, whereas the Wood-gatherer is most snug in its domestic arrangements.

Four eggs has been my general clutch, very rarely five. In colour pale creamy white, and averaging 24×17 mm.

210. *Phacellodomus striaticollis* (d'Orb. et Lafr.). Red-winged Thorn-bird.

Hudson's mention of this species is only characterized by

his non-acquaintance with it. The present writer professes equal ignorance of its habits, pleading that all species of this form present much difficulty in identification and observation, owing to their strictly local habitat and secretive nature, and that accordingly (following his general procedure) he maintains silence when he has nothing to say.

Claude Grant, however, establishes its presence in this locality as being "fairly common, inhabiting rough grasslands and the cañadons; it has a whistling call. The nest is usually placed in a low solitary tree or shrub, and is a longish structure of sticks placed almost horizontally, the entrance being at the higher end and with a tunnel communicating with the nesting-cavity; it is lined with wool and hair." The following is the consensus of various nests examined by myself:—Placed in a Brusquilla bush or isolated and stunted Tala tree (in the "rincon" district), from three to six feet from the ground. Built of thorny twigs of the two above-mentioned plants. About twenty inches long, and generally situated perpendicularly (not horizontally). From the entrance at the top, and at a slight angle, a narrow passage—lined with moss, wool, dry grass, and horsehair—leads down to a false nest; at the opposing side of which, and as it were a step down, is the real breeding-chamber (rather larger than the preceding). This last is domed, deep, and lined all round with fine rootlets and some wool, dry grass, and a few feathers. The nesting-bird sits close, and on being disturbed leaves silently and takes refuge in the surrounding esparto.

The eggs are laid at the end of October or early in November, and the clutch apparently consists of four. They are pure white in colour, rather pointed, and average 21×16 mm.

My own measurements of birds in the flesh are not in accordance with those of Hudson, and none are furnished by Claude Grant. On the other hand, I agree with the latter as to the colouring of the iris, bill, and feet, in both adults and young.

[To be continued.]

XXIII.—*A List of the Birds of the Anglo-Egyptian Sudan, based on the Collections of Mr. A. L. Butler, Mr. A. Chapman and Capt. H. Lynes, R.N., and Major Cuthbert Christy, R.A.M.C. (T.F.).* Part I. CORVIDÆ—FRINGILLIDÆ. By W. L. SCLATER, M.B.O.U., and C. MACKWORTH-PRAED, M.B.O.U.

(Plate IX.)

INTRODUCTION.

UP to quite recently the great collection of Birds in the Natural History Museum has been singularly deficient in material from the Anglo-Egyptian Sudan. This has recently been remedied by the donation of Mr. Butler of the large collection made by him during a long residence in that country.

Mr. Butler was appointed Superintendent of Game Preservation to the Sudan Government in 1901, and retained that post until he retired in 1915. During those years he made good use of his opportunities of collecting birds throughout the Sudan, and the collection presented to the Museum consists of over 3100 beautifully prepared skins. During his residence in the Sudan he published in 'The Ibis' a series of four "Contributions to the Ornithology of the Sudan" between the years 1905 and 1909, in which he described the habits and in many cases unravelled the taxonomy of many of the species he had met with, and these papers are all referred to in the present list.

We are much indebted to him for help in drawing up this paper and for notes of the occurrence of several species in the Sudan not contained in the collection presented to the Museum.

In the winter of 1913-14 Mr. Abel Chapman and Capt. Lynes, R.N., accompanied by Mr. W. P. Lowe, paid a visit to the Sudan for shooting big game and collecting birds. They landed at Port Sudan and proceeded thence to Khartoum; they spent a month or so on the Blue Nile

in Sennar Province, and then travelled slowly up the White Nile as far as Lake No and back. The collections made by them—which have been presented to the Museum and comprise nearly 1600 skins—are most valuable, as they paid great attention to the smaller and more obscure birds and everything was most carefully labelled.

It was the intention of Capt. Lynes to work out the collection himself, but since the outbreak of the war he has been continually on active service and has not been able to do more than to name a few of the birds. We owe our best thanks to Capt. Lynes for permitting us to make use of his collection in conjunction with that of Mr. Butler, and we hope that later on he will himself publish an account of his experiences and the very valuable field-notes which he made.

The third collection, from which the Museum is permitted to retain such specimens as they require, was made by Major Cuthbert Christy, R.A.M.C. (T.F.), during a recent journey made in connection with sleeping-sickness investigation along the southern border of the Bahr el Ghazal from Rejaf to Tembura (see 'Geographical Journal,' vol. 50, 1917, pp. 199–216, with map).

Major Christy was fortunate enough to secure the services of one of Mr. Butler's trained collectors, and made a valuable collection from a region hitherto never visited by an ornithologist.

We have therefore a very fine mass of material to deal with, and we decided to endeavour to make our paper a complete list of the Birds of the Anglo-Egyptian Sudan, which can perhaps be made use of later in order to prepare a Handbook for the use of residents and travellers in that region.

HISTORICAL.

It does not seem out of place to trace briefly the history of the ornithological exploration of the Sudan, but the list of names is a long one and only those of major importance can be mentioned.

The explorations of C. G. Ehrenberg and F. W. Hemprich hardly extended to what is now the Sudan but were confined to the coast of the Red Sea, though in their 'Symbolæ Physicæ' many Sudanese birds were first described.

Almost contemporary with them was the well-known Eduard Rüppell, who was born at Frankfort in 1794. He visited Egypt in 1817 and again in 1822-26, when his travels extended to Nubia and the Red Sea coast. His third journey in 1831-33 was to Arabia and Abyssinia. He discovered at least a hundred new species, and in his 'Systematische Uebersicht' published the first complete list of the Birds of north-east Africa.

Following Rüppell came the Hertzog Paul Wilhelm von Württemberg, who made zoological and botanical collections in Sennar and explored the Blue Nile in 1840-41, and the Swede, Dr. Hedenborg, who travelled in north Arabia, Sennar, and the lower White Nile valley, and whose collections were described by Sundevall.

The first English name on the list is that of John Petherick, who was British Consul at Khartoum for some years and travelled as far as Kordofan, where he made a collection of Birds which was worked out by Strickland. He also sent home the first living example of *Baleniceps* to the Zoological Gardens in London.

The Italian Marchese Orazio Antinori visited north-east Africa in 1859-61 and in 1870-71. His first journey was through Sennar to Kordofan and the Bahr el Ghazal; his second to Eritrea and Abyssinia. He himself published a good account of the birds collected on his first journey, and those of his second were reported on by himself with the aid of Count Salvadori. Another explorer of the same period was Dr. A. E. Brehm, whose travels however did not extend far beyond Khartoum.

It is, however, to Freiherr Theodore von Heuglin (1824-1877) that we owe the greatest advance of our knowledge of the birds of north-east Africa. Between the years 1849 and 1865 he wandered all over the whole of what is now the

Sudan from Egypt to the Bahr el Ghazal and the coasts and islands of the Red Sea, making large collections, which are now chiefly in the Vienna Museum, and copious notes on the breeding and other habits of the birds, all of which were finally embodied in his great work, '*Ornithologie Nordost-Afrikas.*'

The only other name which should be mentioned in connection with the earlier exploration of the upper Nile valley is that of Emin Pasha, whose real name was Eduard Schnitzer (1840-1893). Appointed by Gordon Governor of the Equatorial Province of Egypt, he at once commenced sending collections of birds and mammals from Lado and other stations in his Province to Dr. Hartlaub of Bremen, who published a long series of papers on these, chiefly in the '*Journal für Ornithologie.*' A considerable number of Emin's skins, beautifully prepared and labelled with the fullest particulars in his neat handwriting, are now in the British Museum collection, and form the basis of our knowledge of the avifauna of what is now partly the Mongalla Province of the Sudan and partly the Nile Province of the Uganda Protectorate.

From the time of the death of Gordon in 1885 to the Khartoum expedition of 1898, the Sudan was inaccessible to travellers and collectors.

Since the reoccupation and reopening of the Sudan under the protectorate of Great Britain, a great many travellers and collectors have visited the country; and a list of the more important papers published since that date will be found in the bibliography, including those of Mr. Butler and the earlier explorers.

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GEOGRAPHICAL.

(See Pl. IX.)

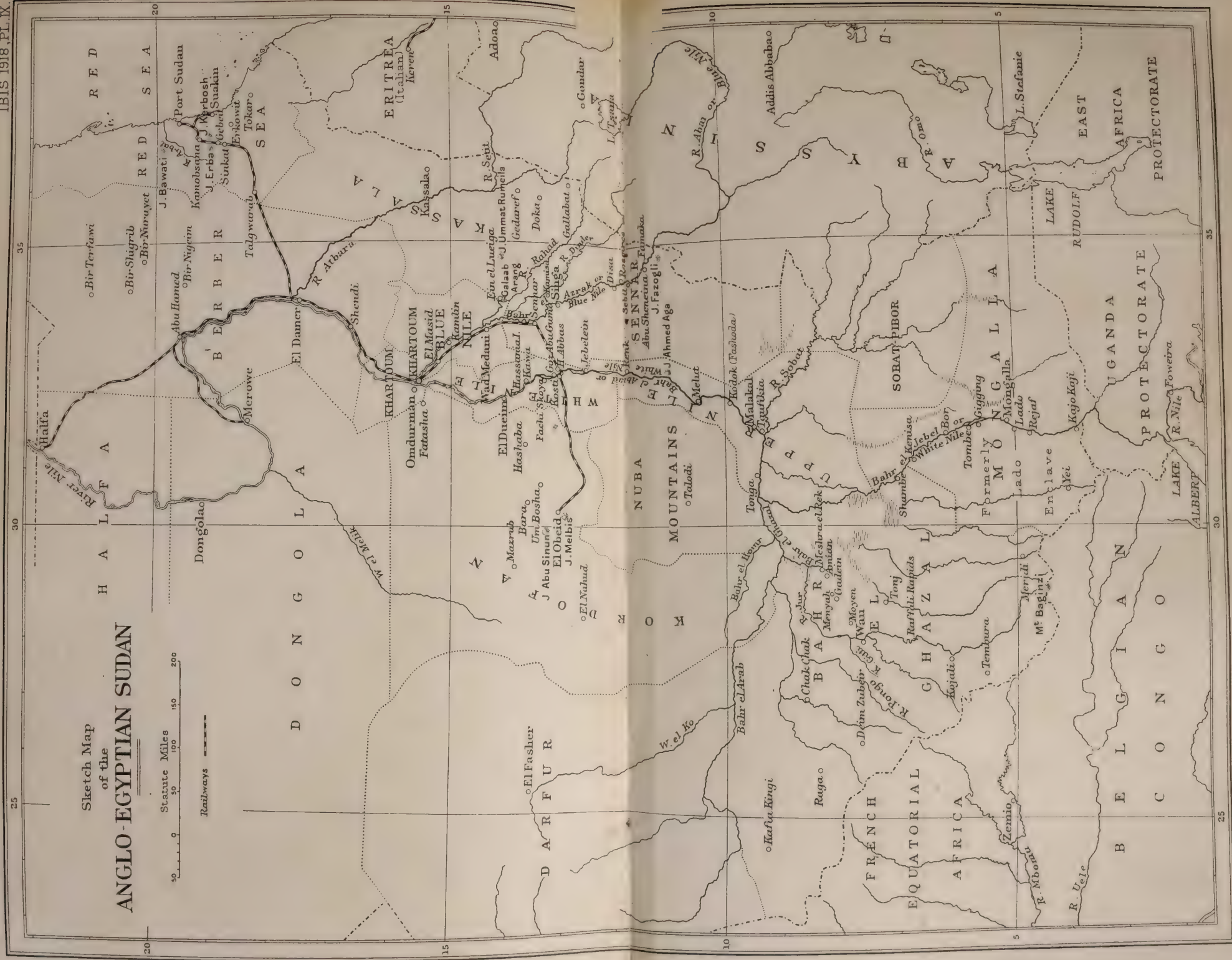
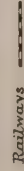
The Anglo-Egyptian Sudan extends from Wadi Halfa, 22° N. lat., to Nimule, $3\frac{1}{2}^{\circ}$ N. lat., a distance of about 1200 miles; while its greatest breadth, from the Darfur-Wadai frontier to the Abyssinian border, is about 950. The whole of it except the coast-belt of the Red Sea Province is in the basin of the Nile and its tributaries, and is remarkable for its low elevation throughout. Between Khartoum (1260 ft.) and Lado (1525 ft.) the level of the Nile only rises 265 ft., and while there are isolated groups of hills here and there, there is nothing which can be called a mountain anywhere in the country, except the range parallel to the coast of the Red Sea behind Port Sudan. Here some of the peaks rise to over 7000 ft. elevation. Elsewhere there appears to be no hills reaching the 5000 foot contour.

The northern part of the Sudan from Wadi Halfa to Shendi is practically rainless, and the country away from the Nile is a desert in the strictest sense of the word.

From Khartoum southwards to Lake No the rainfall is progressively greater, and the country gradually becomes less arid. At Khartoum the rains fall almost entirely in August and do not amount to more than a few inches, while at Taufikia they are a little earlier, in June and July, and perhaps amount to 10 inches. In the Bahr el Ghazal there is a good deal more rainfall, mostly between June and October, perhaps amounting to 20–25 inches. Kordofan is very dry and is without perennial streams. Finally, in Mongalla Province the rains are more evenly distributed over the year and there is a tendency for two rainy seasons, one in June–July, the other in September–October.

It is important to bear in mind the occurrence of the rainy season in tropical and subtropical countries; for the breeding-time of birds depends much more on the rainy season than it does on the seasonal changes of

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temperature, which, as the equatorial belt is approached, become comparatively negligible.

LIST OF SPECIES.

The references and synonymy have been cut down as much as possible. Reference to the original description of the species is given in all cases where it is not obviously stated in the text-book cited, and also one to Shelley's 'Birds of Africa' or Reichenow's 'Vögel Afrikas,' and in the case of palaearctic migrants to Hartert's 'Vögel paläarktischen Fauna.'

A list of specimens in each of the three collections worked over is given, and the localities mentioned are all arranged according to the administrative Provinces into which the territory has been divided, and we hope all the localities will be found marked on the map (Pl. IX.).

The names of the Provinces have been abbreviated as follows:—

Ber. = Berber Province, **R.S.** = Red Sea Province, **Kas.** = Kassala, **Sen.** = Sennar, **B.N.** = Blue Nile, **Kh.** = Khartoum Province, **Kor.** = Kordofan, **W.N.** = White Nile Province, **U.N.** = Upper Nile Province, **B.G.** = Bahr el Ghazal, **Mon.** = Mongalla Province, and **L.E.** = Lado Enclave.

The last-named, formerly part of the Belgian Congo, is, so far as its northern half is concerned, a portion of the Mongalla Province; the southern half south of Nimule forms part of the Nile Province of the Uganda Protectorate, and is outside our limits.

We hope with the concluding instalment to give a few remarks on the general relationship of the fauna of the Sudan, but it seems better to defer this until the work is completed.

The new forms described in the present instalment are as follows:—

Estrilda astrild gaboonensis, nom. n. pro *E. rubriventris* Sharpe & Shelley nec Vieill.: Gaboon.

Anomalospiza butleri, sp. n.

Serinus mozambicus tando, subsp. n.: from Angola.

Serinus mozambicus aurifrons, described for the first time though named by Heuglin in 1856.

Family CORVIDÆ.

Heterocorax capensis minor.

Corvus minor Schlegel, Cat. Mus. Pays-Bas, Coraces, 1867, p. 27 : patr. ignot.

Corvus capensis Licht. ; Butler, Ibis, 1905, p. 326.

[B. coll.] 5 Malakal May, U.N.

[C. & L. coll.] 2 Melut Jan., 1 Taufikia Jan., 1 nr. Lake No * Mch. U.N.

As was first pointed out by Heuglin, the South African Rook is a much larger bird than that of the Nile valley. The wings of the five examples in the Butler collection average 308 mm. (299–315), while those of five birds from Cape Colony average 365 mm. (355–376). Birds from the Transvaal and East Africa are intermediate, but show a gradual decrease in size as we travel northwards. On the other hand, Abyssinian birds are very large, the only two examples in the Museum measuring 355 and 358 mm. respectively.

As it seems necessary to draw a line somewhere, we should be inclined to include all birds from south of the Zambesi with a wing-measurement of less than 330 mm. under the name *H. c. capensis*. Birds from the north of the Zambesi to the Nile valley (except those from Abyssinia) must be called *H. c. minor*, with a wing-measurement of less than 330 mm. The Abyssinian bird will probably require a new name.

Dr. Büttikofer kindly informs us that the type of *Corvus minor* Schlegel is still preserved in the Leyden Museum, and that it resembles *Heterocorax c. capensis* in every respect except that it is so very much smaller. He gives us the following measurements:—Wing 290, tail 170, culmen 50, tarsus 62. It is obviously a very small bird, but not so very much smaller than some of the Sudanese examples. Unfortunately, it has no indication of locality. It was

* We regret to find Lake No has been accidentally omitted from the map; it is an expansion of the Nile at the junction of the Bahr el Ghazal and the Bahr el Jebel.

purchased by the Leyden Museum from Messrs. Verreaux of Paris many years ago.

It is perhaps worth while to give the measurements of the wings of birds in the Museum collection, to show the gradual decrease in size from south to north :—

Cape Colony : ♂ 376, 370, 360, 355 ; ♀ 364. Zululand : ♂ 376. Transvaal : ♂ 345, 338 ; ♀ 354, 349, 344, 335. Damaraland : ♂ 341. Rhodesia : ♂ 337. Angola : ♂ 320. East Africa : ♂ 322, 309 ; ♀ 329. Sudan : ♂ 320, 317, 315, 313, 299 ; ♀ 321, 303. Abyssinia : ♂ 358 ; ♀ 355.

Corvus albus.

Corvus albus P. L. S. Müll. ; Shelley, B. A. v. p. 144.

Corvus scapulatus Daud. ; Butler, Ibis, 1905, p. 326, 1908, p. 223, 1909, p. 79.

[B. coll.] 1 Goz Abu Guma Apl. W.N. ; 1 Renk Jan. U.N. ;
1 Wau Apl. B.G.

[C. & L. coll.] 1 Tonga Feb. U.N.

Corvus umbrinus.

Corvus umbrinus Sundev. ; Shelley, B. A. v. p. 149 ; Butler, Ibis, 1905, p. 326, 1908, p. 223, 1909, p. 394.

[B. coll.] 2 Khartoum Sept.

[C. & L. coll.] 2 Sinkat Mch. R.S.

Rhinocorax affinis.

Corvus affinis Rüpp. ; Shelley, B. A. v. p. 140 ; Butler, Ibis, 1908, p. 223, 1909, p. 394.

[B. coll.] 3 Erkowit Mch. R.S.

[C. & L. coll.] 1 Jebelein Jan. W.N.

Cryptorhina afra.

Cryptorhina afra (Linn.), Shelley, B. A. v. p. 161 ; Butler, Ibis, 1908, p. 223, 1909, p. 79.

[B. coll.] 2 Malakal May June, 4 Taufikia Jan. Mch. U.N. ; 1 Wau Meh., 1 Doleiba May, B.G.

[C. & L. coll.] 5 Taufikia Jan., 6 Tonga Feb. U.N.

[Chr. coll.] 5 Wau July Aug. B.G.

Corvultur crassirostris.

Corvus crassirostris Rüpp. N. Wirb. Vög. 1835, p. 19, pl. 8: Abyssinia.

Corvultur crassirostris (Rüpp.); Shelley, B. A. v. p. 138.

The Thick-billed Raven occasionally wanders over the eastern boundary of the Sudan from the mountains of Abyssinia. It is reported from Famaka, south of Roseires, by Hartmann (J. f. O. 1854, p. 232), and from Galabat by Heuglin (Orn. N.O.-Afr. ii. p. 507). It does not seem to have been recorded since.

Family DICRURIDÆ.

Dicrurus adsimilis divaricatus.

Muscicapa divaricata Lichtenstein, Verz. Doubl. 1823, p. 52: Senegambia.

Dicrurus adsimilis divaricatus (Licht.): Oberholser, Proc. U.S. Nat. Mus. xxviii. 1905, p. 920.

Dicrurus afer apud Shelley, B. A. v. 1912, p. 172; Butler, Ibis, 1905, p. 326, 1908, p. 224, 1909, p. 80.

[B. coll.] 1 Fachi Shoya Nov., 2 Jebelein May, W.N.; 1 Roseires Aug. Sen.; 1 Chak Chak Feb., 1 nr. Tonj river Jan., 1 Tembura Meh. B.G.; 1 Sheikh Tombé, Mon.

[C. & L. coll.] 2 Kamisa Dec., 1 Singa Dec. Sen.; 1 nr. Meshra Zeraf Jan., 1 Malakal Jan. U.N.

[Chr. coll.] 1 Mt. Baginzi Meh. B.G.; 5 Yei Nov. Dec. L.E.

This form of the larger Forked-tailed Drongo only differs from the South African typical race in its smaller size, and was first clearly distinguished by Oberholser. It appears to be common throughout the Sudan, and extends westwards to Senegambia and southwards through East Africa to the Transvaal, where it intergrades with the large typical form.

Family ORIOLIDÆ.

Oriolus oriolus.

Coracias oriolus Linn. Syst. Nat. 10th ed. 1758, p. 107: Sweden.

Oriolus galbula Linn.; Shelley, B. A. v. p. 3; Butler, Ibis, 1905, p. 323, 1909, p. 394.

[B. coll.] 4 Khartoum Sept. Oct.; 1 Jebel Mâba Apl. Sen.

All in immature plumage and on migration (see Butler, Ibis, 1905, p. 323).

Oriolus auratus.

Oriolus auratus Vieill.; Shelley, B. A. v. p. 5; Butler, Ibis, 1908, p. 221, 1909, p. 79.

[B. coll.] 2 Roseires July Aug. Sen.; 1 Chak Chak Jan., 1 Khor Gitti Jan., 2 Raffali Feb., 1 nr. Kojali Mch. B.G.; 1 Kajo Kaji Mch. L.E.

[Chr. coll.] 5 Mt. Baginzi Mch., 2 Meridi Jan, 3 Wau July-Aug. B.G.; 2 Yei Dec. L.E.

The Sudan Orioles have been separated under the name of *O. a. chryseus* Heugl. on account of their having a shorter bill than the typical West African form. We have measured a series of 14 adults from West Africa and 18 from the Sudan, and find that the difference is negligible, namely 28 to 27 mm.

Oriolus larvatus.

Oriolus larvatus Licht.; Shelley, B. A. v. p. 12.

A form of Black-headed Oriole occurs in the Sudan, namely, *Oriolus rolleti* (Salvadori, Atti Accad. Torino, vii. 1864, p. 151), and was described from the Upper White Nile, where it was obtained by Brun Rollett in 7° N. lat.

The species is not represented in the Butler collection.

As there is some doubt about the forms of the Black-headed Oriole, we will not commit ourselves to the sub-specific name.

***Oriolus* sp.**

In Major Christy's collection is a large Oriole obtained at Yambio in March 1916, and sexed ♀, which we are unable to identify. It resembles *O. auratus*, but is slightly larger (wing 147, bill 28); it also has distinct traces of black on the crown, most of the feathers having black bases

which show through in places giving it a slightly spotted appearance. The black streak through the eye resembles that of *O. auratus*, but there is not so much yellow on the wing. It does not seem possible to identify the bird with any known species, but without more material we hesitate to describe it as new.

Family BUPHAGIDÆ.

Buphaga erythrorhyncha.

Buphaga erythrorhyncha (Stanley); Shelley, B. A. v. p. 28; Butler, Ibis, 1905, p. 323.

[B. coll.] 1 Mongalla July Sept.

Buphaga africana.

Buphaga africana Linn.; Shelley, B. A. v. p. 23.

The Yellow-billed Oxpecker is also found in the Sudan, whence it is recorded by Heuglin (Orn. N.O.-Afr. p. 718). It was also obtained by Emin at several localities in the Lado Enclave.

Family EULABETIDÆ.

Onychognathus morio rüppelli.

Onychognathus morio rueppelli (Verr.); Shelley, B. A. v. p. 105.

[B. coll.] 1 Jebel Fazogli May, Sen.; 1 Rejaf Apl. L.E.

Pilorhinus albirostris.

Ptilonorhynchus albirostris Rüpp. N. Wirb. Vög. 1835, p. 22, pl. 9: Abyssinia.

Pilorhinus albirostris (Rüpp.); Reichw. Vög. Afr. ii. p. 704.

Antinori, Cat. p. 62, states that he secured examples on the road between Gedaref and Gallabat; also one example from the White Nile. There are no Sudanese examples in the British Museum.

Spreo superbus.

Spreo superbus (Rüpp.); Shelley, B. A. v. p. 89; Butler, Ibis, 1908, p. 223.

[B. coll.] 7 Mongalla July-Sept.

Spreo pulcher.

Spreo pulcher (P. L. S. Müll.); Shelley, B. A. v. p. 93 ;
Butler, Ibis, 1905, p. 325.

[B. coll.] 1 Shendi Mch. Ber. ; 1 35 m. W. Omdurman
Jan. Kh. ; 1 Sebil Mch. B.N. ; 1 Renk Mch. U.N.

[C. & L. coll.] 2 Sinkat Apl. R.S. ; 2 Kamisa Dec. Sen.

Count Zedlitz (J. f. O. 1911, p. 9) divides this bird into
three subspecies, viz. :—

S. p. pulcher (P. L. S. Müll.) : Senegal ; from N.W. Africa.

S. p. rufiventris (Rüpp.) : Abyssinia ; from Eritrea and
N. Abyssinia.

S. p. intermedius Zedlitz : Adamaua ; from eastern Cam-
eroon to the Anglo-Egyptian Sudan.

We have examined all the examples of this group in the
collection of the British Museum and fail to find any of
the alleged differences, which are chiefly in the shade of the
metallic colouring, always a doubtfully consistent character.

Lamprocolius purpureus amethystinus.

Lamprotornis amethystinus Heuglin, J. f. O. 1863, p. 21 :
Bahr el Ghazal.

Lamprocolius purpureus (P. L. S. Müll.) ; Shelley, B. A.
v. p. 78 ; Butler, Ibis, 1908, p. 222.

[B. coll.] 1 Chak Chak Feb. B.G.

[Chr. coll.] 1 Yei Nov. L.E.

Lamprocolius chalybæus chalybæus.

Lamprotornis chalybæus Hempr. & Ehr. Symb. Phys. 1828,
fol. y, pl. 10 : Dongola.

Lamprocolius cyanogenys Sundevall, Öfver. Vet.-Ak. Förh.
Stockholm for 1850, 1851, p. 127 : Sennar.

Lamprocolius chloropterus schraderi Neumann, Orn.
Monatsb. xvi. 1908, p. 65 : Ailet, N. Abyssinia.

Lamprocolius sycobius apud Butler, Ibis, 1908, p. 222.

[B. coll.] 8 Roseires Apl. July Aug. Sen. ; 1 Sheikh
Tombé "summer," Mon. ; 1 Chak Chak Feb., 1
Moyen Jan. B.G.

[Chr. coll.] 8 Mt. Baginzi Mch. B.G.

There are undoubtedly two species of Glossy Starling, which have often been confused one with the other. The smaller one, with a wing of 115-125 mm. and with a sharply defined blue ear-patch, must retain the original name given by Ehrenberg; while the larger species is *L. cyaniventris*. The synonymy is as given in 1859 by Hartlaub, and subsequently by Neumann (J. f. O. 1905, p. 239) and Ogilvie-Grant (Ibis, 1913, p. 556).

The young bird is originally dull brown below and dark green above; this changes into a more bluish tint on the back, the wings becoming brighter green with dark tips to the feathers, the underside with the chest and under tail-coverts greenish, the belly bright blue. The ear-coverts, originally brownish black, become bright blue and sharply defined.

In West Africa this bird is replaced by a slightly differing form, which should bear the name *L. chalybæus chloropterus* Swains. This differs from the north-east African form in being distinctly greener on the back.

Two birds from the Bahr el Ghazal, killed in January and February, are even more green than the West African form and may eventually prove to be a new subspecies.

However, the birds obtained by Dr. Christy in the same district are practically indistinguishable from the West African form.

***Lamprocolius cyaniventris*.**

Lamprocolius cyaniventris Blyth, Journ. As. Soc. Beng. xxiv. 1855, p. 255: Abyssinia (ex Rüppell).

Lamprocolius abyssinicus Hartlaub, J. f. O. 1859, p. 21: Abyssinia.

Lamprocolius chalybeus apud Butler, Ibis, 1905, p. 325, 1909, p. 79.

[B. coll.] 2 betw. Doka and Atbara river Apl. Kas.;
1 Roseires Apl. Sen.; 1 Tawela Dec., 1 nr. Renk Feb.
U.N.; 1 Jebel Melbis Apl. Kor.

[C. & L. coll.] 2 Jebelein Jan., 1 Lat. 12° N. Meh. W.N.
L. cyaniventris is, as Neumann points out (J. f. O. 1905,

p. 239), the correct name for the Glossy Starling which is generally known as *L. chalybæus*. The wing measures 130–150 mm.

The form of this bird found in the Sudan does not have sharply defined blue ear-patches, though there is always a bluish tinge present.

***Lamprocolius chalcurus*.**

Lamprotornis chalcurus (Nordm.); Shelley, B. A. v. p. 77.

Lamprocolius chalybæus Butler (nec H. & E.), Ibis, 1909, p. 79 (pt.).

[B. coll.] 2 Wau Mch. Apl., 2 Tembura Mch. B.G.;
4 Kenisa "summer," Mon.

[Chr. coll.] 1 Yambio Mch. B.G.; 3 Yei Nov. L.E.

***Lamprotornis splendidus splendidus*.**

Turdus splendidus Vieill. Enc. Méth. ii. 1822, p. 653 :
Malimbe, north of mouth of Congo.

Lamprotornis splendidus (Vieill.); Shelley, B. A. v. p. 65.

[Chr. coll.] Mt. Baginzi Mch. B.G.

This fine species has not previously been noticed in the Anglo-Egyptian Sudan, though it was obtained by Neumann in Shoa; its range extends to Cameroon and to north Angola, and in our view it should bear the typical name founded on a bird obtained at Malimbe in Gaboon by Perrein.

***Lamprotornis purpuropterus purpuropterus*.**

Lamprotornis purpuropterus Rüpp.; Shelley, B. A. v. p. 56.

Lamprotornis porphyropterus apud Butler, Ibis, 1908, p. 222, 1909, p. 79.

[B. coll.] Malakal Jan., Tawela Dec. U.N.; Gardein,
Apl. B.G.; 3 Mongalla May.

[C. & L. coll.] 3 Tonga Feb., 2 mouth of Bahr el Zeraf
Mch. U.N.

***Lamprotornis purpuropterus æneocephalus*.**

Lamprotornis purpuropterus æneocephalus Heugl.; Shelley, B. A. v. p. 56.

Lamprotornis porphyropterus (nec Cab.), Butler, Ibis, 1905, p. 324 (pt.).

[B. coll.] 6 Roseires June Sept. Nov. Dec. Sen.; 1 Ein el Lueiga Apl. B.N.; 1 Fachi Shoya Nov., 1 Kosti May, W.N.

[C. & L. coll.] 4 Kamisa Dec. Sen.; 1 Hassania I. Jan. W.N.

This is the longer-tailed form of Rüppell's Glossy Starling, which has been generally confused with the shorter-tailed form. Shelley and O.-Grant (Ibis, 1902, p. 402) have shown that they must be distinguished as subspecies—the longer-tailed form ranging from Bogosland through the Blue Nile and lower White Nile districts to Kordofan; the short-tailed form, *P. p. purpuropterus*, taking its place farther south in Abyssinia, on the Upper White Nile, and the Bahr el Ghazal, and southwards.

Two of the Roseires birds caused us considerable trouble, as they had shorter tails; but we believe that in these examples the tail was not fully developed. They have also more purplish-bronzy gloss on the lower breast than is usual with the short-tailed form, and we are satisfied that they are correctly placed here.

***Lamprotornis caudatus*.**

Lamprotornis caudatus (P. L. S. Müll.); Shelley, B. A. v. p. 53; Butler, Ibis, 1908, p. 221, 1909, p. 79.

[B. coll.] 1 Wau Jan., 1 Chak Chak Feb., 1 Raffali Feb., 1 Kojali Feb. B.G.

[Chr. coll.] 1 Wau July–Aug. B.G.

***Cinnyricinclus leucogaster leucogaster*.**

Cinnyricinclus leucogaster (Gm.); Shelley, B. A. v. p. 38; Butler, Ibis, 1909, p. 79.

[B. coll.] 8 Roseires Apl. July Aug. Sen.; 10 Wau Mch. Apl. B.G.

[Chr. coll.] 2 Mt. Baginzi Mch., 6 Wau July–Aug. B.G.

Cinnyricinclus leucogaster verreauxi.

Cinnyricinclus verreauxi (Bocage); Shelley, B. A. v. p. 41.

A single example, probably a wanderer, of this southern African race of *C. leucogaster* was secured by Mr. Butler at Mongalla and is now in the Museum at Khartoum. It is distinguished from the northern race by the presence of a white patch on the outer web of the outer tail-feathers.

Family STURNIDÆ.

Creatophora carunculata.

Creatophora carunculata (Gm.) ; Shelley, B. A. v. p. 123.

[B. coll.] 1 Mongalla "summer" Mon. ; 1 Lado Feb.

L.E.

Hypocolius ampelinus.

Hypocolius ampelinus Bp. Consp. i. 1850, p. 336 : California ! (probably Abyssinia, *cf.* Heuglin, Ibis, 1868, p. 181); Shelley, B. A. v. p. 34.

There is a specimen in the British Museum collected by Verreaux and labelled "White Nile." Three specimens in the Paris Museum are also believed to have been obtained in Sennar. It seems probable that it is an occasional migrant to the Sudan. It is otherwise only known from Arabia.

Family PLOCEIDÆ.

Ploceus (Othyphantes) emini.

Othyphantes emini Hartl. ; Shelley, B. A. iv. p. 458.

[Chr. coll.] 1 ♂ juv. Yambio Mch. B.G.

This rare species is not represented in the Butler collection ; but a single young male with a grey back finely streaked with black in the Christy collection appears to be referable to it. The type locality Agarar is in the Nile Province of Uganda.

Ploceus (Hyphanturgus) ocularius crocatus.

Hyphantornis crocata Hartlaub, Abh. Bremen, 1881, p. 100 : Magungo.

Hyphanturgus ocularius (Smith); Shelley, B. A. iv. p. 385 (pt.).

Ploceus ocularius crocatus (Hartl.); Reichenow, V. A. iii. p. 46.

[B. coll.] 1 Tembura Mch. B.G.; 1 Kajo Kaji Apl. L.E.

[Chr. coll.] 9 Meridi Jan.-Feb., 1 Yambio Mch., 1 Tembura Apl. B.G.

Ploceus (Hyphantornis) cucullatus abyssinicus.

Hyphantornis abyssinicus (Gm.); Shelley, B. A. iv. p. 429.

[B. coll.] 5 Roseires Aug. Sept., 1 Rahad river Apl., 1 Gerif Apl. Sen.

Ploceus (Hyphantornis) cucullatus feminina.

Hyphantornis feminina O.-Grant, Bull. B. O. C. xxi. 1907, p. 15: Ruwenzori.

[B. coll.] 1 Kojali Feb. B.G.; 1 Mongalla.

[Chr. coll.] 1 Yambio, Mch., 2 Wau July-Aug. B.G.; 5 Yei Nov.-Dec. L.E.

We have made a careful examination of all the Spotted-backed Weavers in the Museum, and have come to the following conclusions as to the species and races.

PLOCEUS NIGRICEPS Layard, B. S. Afr. 1867, p. 180: Kuruman.

This species has the back evenly mottled, and the black of the head which extends to the nape is followed by a clear yellow ring.

Distribution. South Africa extending north through eastern Africa to southern Somaliland.

PLOCEUS COLLARIS Vieill. N. Dict. xxxiv. 1819, p. 129: Angola.

This species has the back like *P. nigriceps*, but the black of the head extends on to the neck almost to the shoulders and is without the yellow ring; it also has a chestnut patch on the chest.

Distribution. Angola, Gaboon and the lower Congo districts.

[*PLOCEUS CUCULLATUS CUCULLATUS.*

Oriolus cucullatus P. L. S. Müller, Syst. Nat. Suppl. 1776, p. 87: Senegal

All the northern forms of the Spotted-backed Weavers are distinguished by having a yellow back with black scapulars forming a **V**-shaped mark and a few other black feathers. We can recognize four races, of which the West-African one, which keeps the typical name, is distinguished by its very dark brown nape-patch and by the black of the head extending well beyond the level of the ear-coverts.

Distribution. Senegal to Cameroon.

PLOCEUS CUCULLATUS BOHNDORFFI.

Ploceus bohndorffi Reichenow, J. f. O. 1887, pp. 214, 307: Stanley Falls, Belgian Congo.

This race differs from *C. c. cucullatus* in the paler brown of the nape-patch, which extends forward as a narrow band almost to the eye.

Distribution. Belgian Congo.

PLOCEUS CUCULLATUS FEMININA.

Hyphantornis feminina O.-Grant, *supra*.

This race is distinguished from *P. c. bohndorffi* by having a somewhat paler brown nape-patch, which is not sharply defined posteriorly but fades into the colour of the back. The black of the head is more restricted.

This form was originally founded by Grant on the female of a bird from Ruwenzori, which he believed to be distinguished by its yellow underparts. This, however, we consider to be only a seasonal phase, as similar yellow females occur in all the forms of *P. cucullatus*.

Distribution. Upper White Nile, including the Bahr el Ghazal and Uganda. There is also an example in the Alexander collection from Bima on the Welle river, and another from the Mau plateau in British East Africa.

PLOCEUS CUCULLATUS ABYSSINICUS.

Loxia abyssinica Gmel. Syst. Nat. i. 1788, p. 860: Abyssinia.

The Abyssinian bird is again slightly less brightly coloured than *P. c. feminina*; the brown nape is less conspicuous and the black of the head still more restricted.

Distribution. Abyssinia north to Sennar and south to Shoa.]

Ploceus (Sitagra) badius badius.

Hyphantornis badius Cass.; Shelley, B. A. iv. p. 434.

[B. coll.] 3 Roseires July Aug. Sen.; 1 Khartoum Sept.

[C. & L. coll.] 1 Singa Dec., 5 Kamisa Dec. Sen.

All the birds in the Chapman & Lynes collection are in non-breeding dress.

Ploceus (Sitagra) badius axillaris.

Hyphantornis axillaris Heuglin, J. f. O. 1867, p. 381: district of the "Kidj-Neger," i. e. the neighbourhood of Shambé on the Bahr el Jebel or upper White Nile.

Hyphantornis badius (non Cass.); Butler, Ibis, 1908, p. 221.

[B. coll.] 2 Mongalla, 1 Kenisa, 1 Bor May, Mon.

There are undoubtedly two races of this species, as was first pointed out by Butler in a letter addressed to Ogilvie-Grant, dated 26 Sept. 1914, as follows:—"In White Nile birds the whole head is black right on to the nape and sides of the neck, whereas in Blue Nile birds the black shades into chestnut on the back of the head, and does not extend further back on the sides of the head than the ear-coverts. The bill of the White Nile birds is much smaller and straighter; there is a yellow wash on the rump in White Nile birds, which the Blue Nile ones lack, and the White Nile birds have got more chestnut and less yellow on the abdomen and under tail-coverts."

A comparison of the specimens in the Butler collection (there are no others in the British Museum) confirms what Butler has written, and it only remains to settle the nomenclature.

The oldest name is undoubtedly *Hyphantornis badius* (Cassin, Proc. Philad. Acad. 1850, p. 57: Fazokl, i. e. Fazogli in Sennar), and applies to the Blue Nile bird.

Ploceus rufocitrinus Müll., *P. mordoreus* Bp., and *Textor castaneo-auratus* Antin., were all proposed for birds from the same district, and the only other available name is *Hyphantornis axillaris* of Heuglin.

In the J. f. O. for 1867 Heuglin mentions that he had himself obtained examples of this Weaver on the upper White Nile, and he refers to a previous description in J. f. O. 1865, p. 99, where he leaves the bird unnamed but gives the type locality "Kidj Neger," although he alludes to other examples taken by other collectors in Sennar; but on the whole it seems the best course to fix Heuglin's name on to the White Nile bird.

The wings of the three males of *P. b. badius* measure 79, 75, and 75 respectively, and those of *P. b. axillaris* 72, 72, 72, and 71; so that Blue Nile birds appear to be slightly larger.

Ploceus (Sitagra) luteolus.

Sitagra luteola (Licht.); Shelley, B. A. iv. p. 397; Butler, Ibis, 1905, p. 322, 1909, p. 78.

[B. coll.] 4 Roseires June July Aug. Sen.; 1 Jebel Abu Sinun Apl., 2 Bara Apl. Kor.; 1 Gadein Jan., 2 Wau Mch. Apl. B.G.; 3 Sheikh Tombé, 1 Bor, 1 Mongalla Jan. Mon.; 1 Lado Feb. L.E.

[C. & L. coll.] 1 Kamisa Dec. Sen.; 1 Jebel Ahmed Agha Mch., 2 near Lake No Feb. U.N.

[Chr. coll.] 1 Tembura Apl., 1 Wau July-Aug., 2 Yambio Mch. B.G.

Ploceus (Sitagra) vitellinus vitellinus.

Hyphantornis vitellinus (Licht.); Shelley, B. A. iv. p. 443.

[Chr. coll.] 2 ♂ ♀ Tembura Apl. B.G.

We are unable to distinguish these or birds from Shoa and East Africa from the typical West-African form; they have been separated by Neumann as *P. v. uluensis* (Neumann, J. f. O. 1900, p. 282).

Ploceus (Sitagra) tæniopterus.

Hyphantornis tæniopterus (Reichenb.) ; Shelley, B. A. iv. p. 411 ; Butler, Ibis, 1905, p. 323, 1909, p. 78.

[B. coll.] 1 Khartoum Kh. ; 2 Fashoda Aug., 1 Taufikia June, U.N. ; 2 Wau Apl., 1 Meshra el Rek May, B.G. ; 1 Kenisa May, 1 Shambé, Mon.

[C. & L. coll.] 1 Kosti Jan. W.N. ; 1 Jebel Ahmed Agha Jan., 6 40 miles south of Renk Jan., 1 10 miles south of Meshra Zeraf Jan., 1 Melut Jan. U.N.

Ploceus (Sitagra) heuglini heuglini.

Hyphantornis heuglini (Reichenw.) : Shelley, B. A. iv. p. 413 ; Butler, Ibis, 1909, p. 78.

[B. coll.] 1 Kojaki Feb. B.G.

Ploceus (Xanthophilus) galbula.

Xanthophilus galbula (Rüpp.) ; Shelley, B. A. iv. p. 474 ; Butler, Ibis, 1905, p. 322, 1908, p. 221, 1909, p. 394.

[B. coll.] 5 Khor Arbat May, 1 Erkowit Mch., 1 Erba Mch. R.S. ; 1 Gedaref Apl. Kas.

[C. & L. coll.] 3 Erkowit Apl., 2 Sinkat Mch. R.S. ; 1 Kamisa Dec. Sen.

Ploceus (Sitagra) melanocephalus dimidiatus.

Hyphantornis dimidiatus Salvad. & Antin. Atti R. Ac. Torino, 1873, p. 360 : Kassala ; Shelley, B. A. iv. p. 436.

The type of this species was procured by Antinori at Kassala in September 1871, and there are examples in the British Museum from Wadelai (Emin) and from other localities farther south, but it has never been found between the type locality and the Lake district, nor are there any examples in the collections we are now examining. It seems probable, therefore, that there was some mistake about the type locality and the bird is not a Sudanese form at all.

Ploceus (Sitagra) intermedius.

Ploceus intermedius Rüpp. Syst. Uebers. 1845, pp. 71, 76 : Shoa.

Hyphantornis intermedius Shelley, B. A. iv. p. 401.

Heuglin obtained this bird, and first called it *H. erythroptalma*, at Gallabat and Gedaref, in Sennar. He afterwards identified it with Rüppell's species. Shelley doubts the identification, as Heuglin's birds were out of plumage, and suggests that they were probably *P. tæniopterus*.

Amblyospiza albifrons melanota.

Amblyospiza melanota (Heugl.); Shelley, B. A. iv. p. 307.

[B. coll.] 9 Giggling, 1 Kenisa, Jan. Mon.; 2 Rejaf Feb. L.E.

There appear to be three races of the Grosbeak Weaver in east and north-east Africa:

A. albifrons melanota (Heugl.): White Nile to Uganda.

A. a. æthiopica Neum.: S. Abyssinia.

A. a. unicolor Fisch. & Reichw.: British and German East Africa.

The specimen from Kenisa is distinctly darker on the head even than *A. a. æthiopica*, but judging by the white edgings to the breast-feathers it appears to be a young bird and may be referred to *A. a. melanota* for the present.

Anaplectes melanotis.

Anaplectes melanotis (Lafr.); Shelley, B. A. iv. p. 238; Butler, Ibis, 1909, p. 78.

[B. coll.] 2 Jebel Fazogli May, Sen.; 1 Raffali Feb. B.G.

[Chr. coll.] 1 Yambio Mch. B.G.

Aidemosyne cantans orientalis.

Aidemosyne orientalis Lorenz & Hellmayr, O. M. 1901, p. 39: S. Arabia.

Aidemosyne cantans (Gm.); Butler, Ibis, 1909, p. 393.

[B. coll.] 1 Talgwarab Apl. R.S.

[C. & L. coll.] 1 Port Sudan Apl., 1 Erkowit Apl. R.S.

Aidemosyne cantans inornata.

Aidemosyne inornata Mearns, Smiths. Misc. Coll. vol. 61, No. 14, 1913, p. 3: El Dueim, White Nile.

Uroloncha cantans (in part) Shelley, B. A. iv. p. 152; Butler, Ibis, 1905, p. 319, 1908, p. 219.

[B. coll.] 7 ♂, 6 ♀ Roseires Aug. Sept. Sen.; 4 Khar-toum Déc. Feb.; 1 Kawa Nov. W.N.

[C. & L. coll.] 4 White Nile, lat. $13\frac{3}{4}^{\circ}$ – 15° N. W.N.

We have been very carefully into the races of *A. cantans*. We agree with Shelley and the German authors that the type-locality of Gmelin's bird was probably West Africa. We propose to formally designate Dakar, Senegal, for this, where it is known to have occurred.

We can distinguish three races—

1. *A. C. CANTANS* Gm., which extends from West Africa to the Bahr el Ghazal, and of which the Museum contains examples from Gambaga in the Gold Coast Colony, Northern Nigeria, and Lake Chad, all collected by Alexander, and some birds from "the mouth of the Zeraf river," Bahr el Ghazal, collected by Capt. Dunn.

This form is distinguished by its plainer and greyer back, with hardly any indications of the transverse markings on the back itself.

2. *A. C. INORNATA* Mearns, to which form we are inclined to assign all the birds from the Sudan, except those from the Bahr el Ghazal and the Red Sea Province. It seems evident from the fine series in the Butler collection that there is a considerable seasonal plumage-change in this form, the winter birds being much plainer and browner and less transversely barred than those obtained in the summer months. Mearns' description was obviously based on a rather large winter-killed bird.

The Sudan birds on the whole are more barred on the back and are distinctly brown at all times of the year as compared with the West African birds.

3. *A. C. ORIENTALIS* Lorenz & Hellmayr, O. M. 1901, p. 39: S. Arabia, is a still browner and more heavily striped bird, and is confined to south Arabia, Somaliland, and the Red Sea Coast, extending north as far as the Port Sudan district.

As regards *A. c. baräensis* Wettstein (Anz. Akad. Wien, 1916, No. 13, pp. 131-5: Bara, N. Kordofan), we can offer no opinion, as we have no specimens from Kordofan. We should, however, consider it unlikely that a race from that locality should be separable from the very closely related *A. c. cantans* to the west and *A. c. inornata* to the east.

Uræginthus bengalus ugandæ?

Uræginthus bengalus ugandæ Zedlitz, J. f. O. 1911, p. 606: Entebbe.

Estrilda phænicotis (Swains.) ; Butler, Ibis, 1905, p. 319, 1908, p. 219, 1909, p. 78.

[B. coll.] 1 Gallabat May, **Kas.** ; 1 nr. Tonj Dec., 3 Wau Apl. **B.G.** ; 1 Bor, **Mon.**

[C. & L. coll.] 3 Kamisa Dec. **Sen.** ; 2 nr. Lake No Feb. **U.N.**

[Chr. coll.] 1 Yambio Meh., 1 Tembura Apl., 2 Wau July-Aug., **B.G.**

The Ruby-cheeked Cordon-bleu has been divided into a large number of subspecies by Neumann, Reichenow, and Zedlitz. According to the list given by the latter author our form should be referred to the Uganda race.

Our birds are certainly paler than the north-west African form. According to Neumann and Zedlitz the form occurring on the lower White Nile is again distinct in consequence of its paler colour and smaller size, and this has been named *U. b. perpallidus*, but the material in the Museum is hardly sufficient to settle the status of the various races.

A female from Gallabat and three males from Kamisa should be referred according to Zedlitz to *U. b. senafensis*, but we are unable to distinguish them from the Bahr-el-Ghazal race, and we feel sure that Zedlitz has made many more races than can be finally upheld.

Estrilda astrild macmillani.

Estrilda macmillani O.-Grant, Bull. B. O. C. xix. 1907, p. 108: Baro river.

[C. & L. coll.] 2 nr. Tonga Mch. U.N.

Two males shot from the same flock have the "legs darkest sepia, bill brilliant vermilion, and iris dark." One of the individuals is rather more rosy on the lower breast than the other, but neither are strongly marked with the rosy flush. Wings 45, 47 mm. We consider these birds are nearest to this small-winged race, which is confined to the Sobat river and the adjacent portion of the Nile valley, though they are slightly larger than the type. The coloration of this race is nearest that of *E. a. occidentalis*.

***Estrilda astrild peasei*.**

Estrilda peasei Shelley, Bull. B. O. C. xiii. 1903, p. 74 : S. Abyssinia.

[B. coll.] 2 Kenisa, Mon.

These two birds are intermediate between *E. a. peasei* and *E. a. occidentalis*, the west African race. On the whole they seem rather nearer to the typical *E. a. peasei*. Wings, ♂ 47, ♂ 50 mm. *E. a. peasei* measures 48–52 mm. *E. a. occidentalis* measures from 45·8 to 48 mm. They have also more of the rosy flush of *E. a. peasei*, which is not so pronounced in *E. a. occidentalis*.

The latest list of the races of *Estrilda astrild* is that of Zedlitz (J. f. O. 1916, p. 36).

The following is a revised list based on the material in the Natural History Museum :—

1. *E. A. ASTRILD* (Linn.), founded on Edwards, from the "East Indies." As this name has always been connected with the South African form we designate Cape Town as the typical locality. South Africa north to the Zambesi, but not Damaraland or Portuguese East Africa. Wing average 50 mm.

2. *E. A. DAMARENSIS* Reichw. (O. M. 1902, p. 173 : German S.W. Africa). A paler desert form from the S.W. African Protectorate. Wing average 50 mm.

3. *E. A. CAVENDISHI* Sharpe (Ibis, 1900, p. 110 : Mapicuti, Portuguese E. Africa. Type in B.M.). A rather darker

bird than *E. a. astrild*, with a rather paler throat. It is intermediate between *E. a. astrild* and *E. a. minor*. Wing 45-48, type 45 mm.

E. a. nyassæ Neumann (J. f. O. 1907, p. 596 : New Helgoland, S. Germ. E. Afr.) is apparently a synonym.

Distr. Rhodesia, Portuguese E. Africa, Nyasaland, and S.W. German East Africa.

The type of this bird is undoubtedly an unusually dark specimen, and others from the same district are considerably paler.

4. *E. A. MINOR* Cabanis (J. f. O. 1878, p. 229 : Voi river, 50 m. N. of Mombasa). Back much the same shade as in *E. a. astrild*, but with a white throat ; very little rosy flush as a rule. Wing average 48 mm.

E. a. massaica Neumann (J. f. O. 1907, p. 596 : Njoro, Brit. E. Afr.) is apparently a synonym.

Distr. German and British East Africa.

5. *E. A. NYANZÆ* Neumann (J. f. O. 1907, p. 596 : Bukoba, west of Victoria Nyanza). Distinguished by the grey-brown, not reddish-brown back ; throat white. Wing 48 mm.

E. a. münzneri Kothe (O. M. 1911, p. 70 : Bismarckburg on L. Tanganyika) is apparently a synonym.

Distr. Uganda and central part of Belgian Congo.

A single specimen from Albert Edward Nyanza shows considerable approach to *E. a. gaboonensis* from the western Congo.

6. *E. A. ANGOLENSIS* Reichw. (O. M. 1902, p. 173 : Angola). Resembling *E. a. astrild*, but with more rosy flush below and darker on the back ; chin rosy. Wing 47 mm.

7. *E. A. GABOONENSIS*, nom. nov. pro *E. rubriventris* Sharpe & Shelley, nec Vicill. : type Landana (*Petit*), B.M. Reg. no. 89/7/20/453. This form is a very distinct one as stated by Shelley, but as the name used by him applies to a Senegal bird the form requires a new name.

Distinguished at once by its brilliant rosy wash which extends over the back. Wing 47 mm.

Distr. Western Belgian Congo and Gaboon.

8. *E. A. OCCIDENTALIS* Fraser & Jard. (Contr. Orn. 1851, p. 156 : Fernando Po). Back reddish brown, nearer *E. a. astrild* and unlike *E. a. nyanzæ* ; a rosy flush over the whole of the underparts, but as a rule no rosy central streak below. Wing 47 mm.

Distr. Cameroon, Fernando Po, and Sierra Leone. Also eastwards to the Upper Welle (*Alexander*), Lado Enclave, and Mongalla, where it meets with the following race.

9. *E. A. PEASEI* Shelley (Bull. B. O. C. xiii. 1903, p. 75 : Jeffi Dunsä, S. Abyssinia) (type in Brit. Mus.).

E. a. erlangeri Reichw. (J. f. O. 1907, p. 20 : nr. Adis Ababa, Abyssinia) is a synonym.

Resembling *E. a. minor*, but larger. Wing average 50 mm. Chin white and underparts a rich pink, and the barring obsolete on the breast.

Distr. Highlands of Abyssinia and Shoa.

10. *E. A. MACMILLANI* : see above. The smallest race. Wing 43–45 mm. Less pink underneath and barring more obsolete.

Of these races, the three extreme forms are *E. a. astrild* from S. Africa, *E. a. gaboonensis* from the Congo, and *E. a. peasei* from Abyssinia. The others can all be described as intermediate with one or the other.

Other described forms are :—

E. a. sousæ Reichw. : St. Thomas Island.

E. a. jagoensis Alexander : Cape Verde Islands (erroneously placed by Shelley under *E. cinerea*).

E. a. sanctæ-helenæ Shelley : St. Helena.

When writing the above we overlooked the fact that Reichenow had described two more races in the O. M. 1916, p. 168. The difficulty of dealing with these is considerably increased by their being only compared to *E. a. astrild* and not to the neighbouring races. The first, *E. a. niediecki* from the Kafue river, from which locality there are specimens in the Museum, appears to be, like *E. a. nyassæ* Neum., a synonym of *E. a. cavendishi* Sharpe.

It is probable that some specimens from this locality will show an approach to the greyer-backed neighbouring form to the north, *E. a. nyanzæ* Neum.

E. a. adesma, on the other hand, from Lake Kivu seems to be, from the single example available, quite distinct from any form. As we had only one specimen we had considered it as merely an abnormality, but the almost complete absence of barring on the upper side is a very noticeable feature.

***Estrilda cinerea*.**

Estrilda cinerea (Vieill.); Shelley, B. A. iv. p. 203 ;
Butler, Ibis, 1908, p. 219, 1909, p. 78.

[B. coll.] 2 Roseires Aug. Sen. ; 1 Chak Chak Feb.,
2 Wau Mch. Apl., 1 Moyen May, B.G.

[C. & L. coll.] 3 20 miles south of Sennar Jan. Sen. ;
3 mouth of Bahr el Zeraf Mch. U.N.

***Estrilda rhodopyga rhodopyga*.**

Estrilda rhodopyga Sund. ; Shelley, B. A. iv. p. 205 ;
Butler, Ibis, 1905, p. 320.

[B. coll.] 5 Khartoum July, Nov.

[C. & L. coll.] 1 20 miles south of Sennar Jan. Sen.

***Estrilda paludicola*.**

Estrilda paludicola Heugl. ; Shelley, B. A. iv. p. 214 ;
Butler, Ibis, 1908, p. 219.

[B. coll.] 3 Chak Chak Mch. B.G. ; 1 Rejaf Apl. L.E.

[Chr. coll.] 1 Yei Nov. L.E.

***Estrilda nonnula*.**

Estrilda nonnula Hartl. ; Shelley, B. A. iv. p. 226.

[Chr. coll.] 3 Yambio Mch. B.G.

There is also an example from near Rejaf in the British Museum.

***Estrilda nigricollis nigricollis*.**

Estrilda nigricollis (Heugl.) ; Shelley, B. A. iv. p. 223.

Lagonosticta butleri O.-Grant, Bull. B. O. C. xxi. 1906,
p. 16: Chak Chak ; Butler, Ibis, 1908, p. 220.

[B. coll.] 2 Chak Chak Feb. B.G.

Lagonosticta butleri, described by Mr. Ogilvie-Grant, was based on a young female of what is without doubt *Estrilda nigricollis* Heuglin.

Neumann distinguishes a slightly paler race from Togoland (*E. larvata togoensis* Neumann, O. M. 1907, p. 167), and this difference appears to be recognizable judging by the examples in the British Museum, but we do not agree with him that either of these can be considered to be subspecies of *E. larvata*.

There are examples of the typical race in the British Museum, in addition to those from Chak Chak, from the Ubangi and Shari rivers obtained by Alexander, and of the paler race (*E. n. togoensis*) from Northern Nigeria (*Alexander & Forbes*) and the hinterland of the Gold Coast (*Alexander*).

***Estrilda larvata larvata*.**

Amadina larvata Rüpp. N. Wirb. Vög. 1835, p. 97, pl. 36. fig. 1 : Semien.

Estrilda larvata (Rüpp.) ; Shelley, B. A. iv. p. 225.

Lagonosticta nigricollis Butler (nec Heugl.), Ibis, 1905, p. 321.

Lagonosticta larvata (Rüpp.) ; Butler, Ibis, 1908, p. 219.

[B. coll.] 1 Gallabat Apl. Kas. ; 3 Roseires Apl. Aug.,
2 Famaka May, Sen.

***Nesocharis capistrata*.**

Pytelia capistrata Hartl. J. f. O. 1861, p. 259 : Bissao, W. Africa.

Chlorestilda capistrata (Hartl.) ; Shelley, B. A. iv. p. 177.

Nesocharis capistrata (Hartl.) ; O.-Grant, Trans. Zool. Soc. xix. 1910, p. 295.

[Chr. coll.] 5 Meridi Jan. B.G.

We cannot see the slightest difference between these and West African specimens ; so far as we are aware, this species has not been previously obtained farther east than the Tomi river, a tributary of the Ubangi on the Shari-Ubangi road, where it was got by Alexander. Major Christy's birds, therefore, extend the range to within the southern borders of the

Bahr el Ghazal. Emin's birds from west of Albert Nyanza, referred to this species by Shelley, are really *N. ansorgei*.

Lagonosticta melanogastra.

Lagonosticta melanogastra Heugl. J. f. O. 1863, p. 273 : Djur, B.G.; Shelley, B. A. iv. p. 247.

Habropyga rara Antin. Cat. 1864, p. 72.

[B. coll.] 2 Kajo Kaji Mch. L.E.

Lagonosticta rufopicta.

Estrilda rufopicta Fraser, P. Z. S. 1843, p. 27 : Gold Coast.

Lagonosticta rufopicta (Fraser); Shelley, B. A. iv. p. 262.

[B. coll.] 1 Bor May, 1 Kenisa Jan. Mon.; 1 Kajo Kaji Mch.; 1 S. of Rejaf Apl. L.E.

Lagonosticta senegala brunneiceps.

Lagonosticta brunneiceps Sharpe, Cat. Bds. B. M. xiii. 1890, p. 277 : Maragaz; Butler, Ibis, 1905, p. 320, 1909, p. 78.

Lagonosticta senegala erythraea Neumann, J. f. O. 1905, p. 349 : Adarte.

[B. coll.] 1 Gedaref May, Kas.; 1 Khartoum Nov.; 1 Wau Apl. B.G.

[C. & L. coll.] 1 Singa Dec., 2 Kamisa Dec. Sen.; 2 Jebel Ahmed Agha Jan. U.N.

The type of *L. brunneiceps* Sharpe is a bird collected at Maragaz in Eritrea by Jesse and is so marked in Dr. Sharpe's writing, though not so mentioned in the printed Catalogue of Birds. It is undoubtedly identical with Neumann's subspecies which was obtained in the same district.

The birds in the Butler collection from Gedaref and Khartoum, as well as those in the Chapman & Lynes collection, appear to be referable to this form. The specimen from the Bahr el Ghazal is a female and cannot be satisfactorily determined; but there are two other examples in the British Museum from the Bahr el Jebel, and they certainly seem to differ from those of the northern Sudan in their browner backs and in having much less red on the top of the

head. If more specimens were available they might perhaps be regarded as a distinct race. They do not fit well into any of the races mentioned by Zedlitz in his revision of the subspecies (O. M. xviii. 1910, p. 171).

Lagonosticta rhodopsis.

Estrelida rhodopsis Heuglin, J. f. O. 1863, p. 166 : Gazelle R.

This species is only known from the types. Reichenow suggests (Vög. Afr. iii. p. 198) that they are immature examples of *L. brunneiceps*.

Sporæginthus subflavus subflavus.

Estrilda subflava (Vieill.) ; Shelley, B. A. iv. p. 207.

[B. coll.] 1 Bor, Mon. ; 1 Kajo Kaji Apl., 2 Lado Feb. L.E.

[C. & L. coll.] 7 Melut Jan., 2 Tonga Feb., 2 near Lake No Feb., 4 Bahr el Zeraf Feb. U.N.

Hypochoera ultramarina ultramarina.

Fringilla ultramarina Gmelin, Syst. Nat. i. pt. 2, 1789, p. 927 : Abyssinia.

Hypochoera ultramarina (Gmel.) ; Shelley, B. A. iv. p. 8 ; Butler, Ibis, 1905, p. 316, 1909, p. 77.

[B. coll.] 1 Shendi Feb. Ber. ; 2 Gedaref May, Kas. ; 4 Roseires Aug. Sept. Sen. ; 3 Khartoum Oct. Nov. Feb. ; 1 Tawela Dec. U.N. ; 2 Wau Apl. B.G. ; 2 Mongalla.

[C. & L. coll.] 3 Singa Dec. Sen.

Hypochoera funerea wilsoni.

Hypochoera wilsoni Hartert, Nov. Zool. viii. 1901, p. 342 : Middle Niger.

[B. coll.] 1 Sheikh Tombé, 2 Mongalla, Mon.

We have examined all the specimens of the genus in the Museum and have come to the conclusion that there are four main groups which can be again divided into a number of races. As in one or two instances examples of more than one of the main groups occur together, we think they should

be regarded as species. We also agree with Alexander (Bull. B. O. C. xxiii. 1908, p. 15) that variation in the brown of the quills is not a specific character. We would recognize the following :—

A. Glossy blue with a faint green tinge.

1. *H. CHALYBEATA CHALYBEATA* (P. L. S. Müll.), with which *H. nitens* (Gm.) and *H. ænea* Hartl are synonymous. Distinguished by its glossy blue plumage with a faint green tinge.

Examples from Senegambia, Portuguese Guinea, and the Gambia.

2. *H. c. NEUMANNI* (*Hypochoera neumanni* Alexander, Bull. B. O. C. xxiii. 1908, p. 33). A clear steel-blue without greenish gloss.

Youn. Lake Chad and Bautahi in N. Nigeria.

3. *H. c. AMAUROPTERYX* Sharpe, Cat. Bds. B. M. xiii. 1890, p. 309: Rustenberg. Very similar to *H. c. neumanni* in general colour but darker and with much less gloss. Examples examined from Rustenberg, the Zambesi, Nyasaland, and Damaraland.

A bird from Kasai, Belgian Congo, is slightly duskier, and skins from the Ubangi river (Alexander) seem to be intermediate between *H. c. neumanni* and *H. c. amauropteryx*.

B. Deep purple almost black, with hardly a trace of gloss.

4. *H. FUNEREA FUNEREA* De Tarrag. Rev. Zool. 1847, p. 180: Natal. Deep purple with faint traces of gloss. Examples from Natal, Mozambique, and Nyasaland, where it merges with the following.
5. *H. f. NIGERRIMA* (Sharpe, P. Z. S. 1871, p. 133: Galungo Alto, Angola). More dusky than *funerea*, almost black without gloss.

Examples from Kassongo, Upper Congo, and Angola.

6. *H. f. WILSONI* (Hartert, *vide supra*). Very like the South African bird but rather brighter in colour. Examples from Portuguese Guinea, Senegal and Southern Nigeria, as well as the Bahr el Ghazal.

C. Purple with a brilliant gloss.

7. *H. ULTRAMARINA ULTRAMARINA* (Gmel., *vide supra*).
Brilliant glossy purple.

Examples from Abyssinia and Anglo-Egyptian Sudan.

8. *H. u. PURPURASCENS* (*H. purpurascens* Reichenow, J. f. O. 1883, p. 221 : Usegua, Germ. E. Afr.) is intermediate between *H. u. ultramarina* and *H. f. funerea*, and is perhaps best placed here as a subspecies of the former.

Examples from British East Africa and Uganda.

D. Green with considerable gloss.

9. *H. CODRINGTONI* (Neave, Mem. Lit. Phil. Soc. Manchester, vol. 51, No. 10, 1907, p. 94 : Molilo's, N.E. Rhodesia).
10. *H. NIGERIÆ* (Alexander, Bull. B. O. C. xxiii. 1908, p. 15 : Kiri river, N. Nigeria).

These two birds, each only represented by one example (the types in each case), are quite distinct from any other members of the other groups. They appear also to be distinct one from the other, *H. codringtoni* being the largest, with a wing measurement of 70 mm. against 66 mm. of *H. nigeriæ*. Probably *H. nigeriæ* will eventually be placed as a subspecies of *H. codringtoni*.

***Pytelia melba citerior*.**

Pytelia citerior Strickland, Contr. Orn. 1852, p. 151 : Senegambia ; Butler, Ibis, 1905, p. 321.

[B. coll.] 2 Fatasha, nr. Khartoum, Jan. Feb., 2 Sudan (probably Khartoum); 1 Ummat Rumeila June, Kas.

The bird from Ummat Rumeila is intermediate between this form and *P. m. soudanensis*.

***Pytelia melba soudanensis*.**

Zonogastris soudanensis Sharpe, Cat. Bds. B. M. xiii. 1890, p. 298 : type said to be from Khartoum, probably from Eritrea.

[B. coll.] 1 Roseires Aug. Sen.

[C. & L. coll.] 2 Kamisa Dec., 2 Sennar Dec., 1 Singa Dec. Sen.

***Pytelia melba kirki*.**

Pytelia kirki Shelley, Bull. B. O. C. xiii. 1903, p. 76 : Lamu.

Pytelia citerior et *P. soudanensis* apud Butler, Ibis, 1908, p. 220.

[B. coll.] 1 Pongo R., 1 Chak Chak Feb., 2 Wau Apl. B.G.; 5 Mongalla Jan. May "July-Sept," 1 Shambé Jan., 1 Bor "summer," Mon.

We have gone very carefully into the question of the races of this species, which have been up to now in considerable confusion, and we agree with Zedlitz (J. f. O. 1916, p. 32) in considering that *P. citerior* must be regarded as a race of *P. melba*.

We find five well-marked subspecific races represented in the British Museum collections.

1. *P. MELBA MELBA* Linnæus, Syst. Nat. 1758, p. 180 : Angola (apud Zedlitz).

Red of face extending to the cheeks and well down the throat; a grey stripe through the eye; breast-band distinctly green; under tail-coverts unbarred.

Distr. South Africa, north to the Congo at Landana and Nyasaland, but not in Cape Colony.

2. *P. MELBA BELLI* O.-Grant, Bull. B. O. C. xxi. 1907, p. 14 : Ruwenzori.

Red of the face not extending to the cheeks, but even lower down the throat, almost completely covering the breast-band; a grey stripe through the eye: under tail-coverts barred.

Distr. Uganda, Ruwenzori to Lake Albert.

3. *P. MELBA KIRKI* Shelley, Bull. B. O. C. xiii. 1903, p. 76 : Lamu, Brit. E. Afr. (type in British Museum).

Red of the throat and cheeks as in *P. m. melba*; no grey eye-stripe; breast faintly tinged with green; underparts as in *P. m. melba*, but the under tail-coverts faintly barred, sometimes plain.

Distr. British East Africa, extending to Somaliland, south Abyssinia, and the upper White Nile.

The type-specimen of this race, described by Shelley, appears to be abnormally coloured, possibly due to some preservative, as the barring on the belly has practically disappeared and the feathers there have a washed-out dirty brown appearance. Another example from Manda I., which is practically the same locality, is like other East African examples of the same race.

P. m. tanganyicæ Reichenow (D. Zentral-Afr. Exped. iii. Zool. i. 1910, p. 332: Usambara on Lake Tanganyika) appears to be intermediate between *P. m. kirki* and *P. m. belli*.

P. m. affinis Elliot (Field Columbian Publ. Orn. i. 1897, p. 34: Ogaden, Somali) may possibly be a distinct race confined to Somaliland, but it is not the East African race.

The birds in the Butler collection from the Bahr el Ghazal, as opposed to those from Mongalla, are somewhat intermediate between *P. m. kirki* and *P. m. citerior*, but as these two are very distinct, the intermediate form may require another name.

4. *P. MELBA SOUDANENSIS* Sharpe, Cat. Bds. B. M. xiii. 1890, p. 298: type said to be from Khartoum, probably from Eritrea.

Like *P. m. kirki*, but paler on the underside; under tail-coverts strongly barred and breast-band yellower; red generally confined to the throat; no grey eye-stripe.

Distr. Blue Nile Provinces of the Sudan, Eritrea, northern Abyssinia, and north Somaliland.

With this form *P. jessei* Shelley (Bull. B. O. C. xiii. 1903, p. 76: Anseba river, Eritrea) is synonymous.

The type of *P. soudanensis*, though labelled Khartoum, is a dealer's skin, quite unlike the form occurring at Khartoum, but is quite similar to birds from Eritrea and probably came from Keren, as suggested by Shelley.

The birds in the Chapman & Lynes collection from the Semmar district are not quite typical *P. m. soudanensis*, but show traces of the lighter colouring of the next form.

5. *P. M. CITERIOR* Strickland, Contr. Orn. 1852, p. 151 : Kasamanse river, Senegambia.

Red restricted to the upper part of the throat, underparts very pale, belly almost white ; breast-band clear yellow.

Distr. Senegambia to Kordofan and the lower White Nile at Khartoum.

***Pytelia afra*.**

Pytelia afra (Gmel.) ; Shelley, B. A. iv. p. 269.

[B. coll.] 1 Kajo Kaji Apl., 1 south of Kaia river, L.E.

This bird had previously been obtained in the Kavirondo district of British East Africa, and these examples in Mr. Butler's collection extend its range farther north ; it has also been found in southern Abyssinia.

***Pytelia phœnicoptera emini*.**

Pytelia phœnicoptera emini Hartert ; Shelley, B. A. iv. p. 266.

[B. coll.] 2 Kajo Kaji Mch. Apl. L.E.

[Chr. coll.] 2 Yei Nov. L.E.

We are inclined to believe that *Pytelia hypogrammica* and *P. lopezi* (Alexander, Bull. B. O. C. xvi. 1906, p. 124), which exactly correspond to *P. p. phœnicoptera* and *P. p. emini* as far as subspecific characters and distribution are concerned, will prove to be phases of the same bird. *P. lopezi* differs only in having the head red, and *P. hypogrammica* in having the head red and the wings yellow. *P. lopezi*, with red wings and red head, is represented only by the type, and if our suggestion is correct, is a rare phase of the adult male, the more common being the yellow-winged phase known as *P. hypogrammica*. It is well known that exactly the same colour-change occurs in the wings of *Anaplectes melanotis*, so that we feel sure that *P. lopezi* and *P. hypogrammica* are colour phases whether distinct from *P. phœnicoptera* or not. Against this theory is the fact that there are apparently adult males of *P. phœnicoptera* in the collection without red heads, so that, unlike the other species of *Pytelia*, the red would only be assumed as a breeding plumage. We have not sufficient material to do more than make the suggestion,

and to hope that it may be investigated in the field by some fortunately situated ornithologist.

Pytelia phœnicoptera lineata.

Pytelia lineata Heuglin, J. f. O. 1863, p. 17: Dembea, nr. Lake Tsana; Shelley, B. A. iv. p. 267.

There are two examples of this Abyssinian subspecies in the Tring Museum obtained by Butler at Roscires on the upper Blue Nile, in which country it was also procured by Heuglin and Duke Paul of Württemberg. Except for this it is confined to Abyssinia.

Spermestes cucullatus cucullatus.

Spermestes cucullatus (Swains.); Shelley, B. A. iv. p. 167; Butler, Ibis, 1908, p. 219, 1909, p. 78.

[B. coll.] 1 Abu Sheneina Mch. Sen.; 1 Khor Gitti Feb., 1 Tembura Mch. B.G.; 1 Kajo Kaji Mch. L.E.
[Chr. coll.] 2 Yei Nov. L.E.

These birds are more or less intermediate between *S. c. cucullatus*, from W. Africa, and *S. c. scutatus*, which occurs in Abyssinia.

Sporopipes frontalis.

Sporopipes frontalis (Daud.); Shelley, B. A. iv. p. 300; Butler, Ibis, 1905, p. 321.

[B. coll.] 1 Jebel Melbis Apl., 1 Um Bosha May, Kor.; 4 Mongalla.

[C. & L. coll.] 2 Kamisa Dec. Sen.

So far as we can determine, the measurements of Abyssinian birds, separated by Mearns (Smiths. Misc. Coll. 56, No. 14, p. 7) as *S. f. abyssinicus*, are not recognizably larger than those of the typical race, and his name must become a synonym.

Amadina fasciata fasciata.

Amadina fasciata (Gm.); Shelley, B. A. iv. p. 123; Butler, Ibis, 1905, p. 319.

[B. coll.] 1 Doka May, 1 Setit river, May, Kas.

[C. & L. coll.] 1 Sennar, 3 near Kamisa Dec. Sen.

These birds are somewhat aberrant and show an approach to the eastern race *A. f. alexanderi*, which occurs in Abyssinia and southwards to Rhodesia.

Ortygospiza atricollis atricollis.

Ortygospiza atricollis (Vieill.) ; Shelley, B. A. iv. p. 158.

[B. coll.] 3 Kajo Kaji Apl. **L.E.**

[C. & L. coll.] 4 Bahr el Zeraf Feb. Mch., 1 Taufikia Jan., 1 near Melut, **U.N.**

Zedlitz gives a good and clear account of the races of this species (J. f. O. 1911, pp. 602-4) ; since then Lynes (Bull. B. O. C. xxxiii. 1914, p. 131) has described another quite distinct form from Gaboon.

We find that in the present series, especially among the birds from Lado, the chin sometimes shows a little white, indicating an approach to the southern *O. a. polyzona* and to *O. a. mulleri* of East Africa and south Abyssinia.

Clytospiza monteiri.

Clytospiza monteiri (Hartl.) ; Shelley, B. A. iv. p. 297.

[B. coll.] 2 Kajo Kaji Mch. **L.E.**

[Chr. coll.] 3 Tembura Apl. **B.G.**

Pseudonigrita arnaudi arnaudi.

Philetairus arnaudi (Bp.) ; Shelley, B. A. iv. p. 132.

[B. coll.] 4 Mongalla July-Sept. **Mon.** ; 1 Rejaf Feb. **L.E.**

Quelea quelea æthiopica.

Quelea æthiopica (Sund.) ; Shelley, B. A. iv. p. 115 ; Butler, Ibis, 1905, p. 319.

[B. coll.] 2 Gedaref June, **Kas.** ; 3 Roseires Aug. **Sen.** ;
1 El Masid Mch. **B.N.** ; 4 Khartoum Aug. Sept. ;
6 Mongalla ; 3 Lado Feb.

[C. & L. coll.] 1 Senmar, 1 Kamisa Dec. **Sen.** ; 1 Kosti Jan. **W.N.**

Shelley has shown (*l. c.* p. 150) that the name *Fringilla sanguinirostris* (Linn. S. N. 1758, p. 173) does not apply to this species.

Quelea cardinalis.

Ihyphantica cardinalis Hartlaub, J. f. O. 1880, p. 325 : Lado.

Quelea cardinalis (Hartl.) ; Shelley, B. A. iv. p. 119.

[B. coll.] 1 Mongalla.

Quelea erythrops.

Quelea erythrops (Hartl.) ; Shelley, B. A. iv. p. 117.

A single bird was procured in the Bongo country, Bahr el Ghazal, by Heuglin and made the type of his *Foudia hæmatocephala*. It has not since been recorded from the Sudan.

Ploceipasser superciliosus.

Ploceipasser superciliosus (Rüpp.) ; Shelley, B. A. iv. p. 333 ; Butler, Ibis, 1905, p. 322, 1908, p. 220, 1909, p. 78.

[B. coll.] 3 Roseires Aug. Sept., 1 Fazogli May, Sen. ;

1 Jebel Melbis Apl. Kor. ; 1 Chak Chak Feb.,

1 Khor Gitti Mch., 1 Raffali Feb., 1 Wau Apl. B.G.

[Chr. coll.] 5 Wau July-Aug. B.G.

Ploceipasser mahali melanorhynchus.

Ploceipasser melanorhynchus Rüpp. ; Shelley, B. A. iv. p. 328.

[B. coll.] 13 Mongalla May-Sept.

Pyromelana flammiceps craspedopterus.

Pyromelana flammiceps (Swains.) ; Shelley, B. A. iv. p. 104.

Pyromelana flammiceps petiti (Des Murs) ; Neumann, J. f. O. 1905, p. 344.

Pyromelana flammiceps craspedopterus (Bp.) ; O.-Grant, Ibis, 1913, p. 564.

[B. coll.] 1 Wau Mch. B.G. ; 3 Mongalla.

The north-east African form of *P. flammiceps* is distinguished from that in West Africa by Neumann on the character of the broader frontal band. Mr. Ogilvie-Grant finds that the under tail-coverts of the southern Abyssinian birds are white, and believes that this is a good distinctive character.

The only adult breeding male in the Butler collection (one from Mongalla) has the under tail-coverts part-coloured white on one side and brownish on the other, while the frontal band is fairly well-developed.

Neither of these distinctions seem to us entirely satisfactory, but we propose to retain the subspecies provisionally.

Des Murs' name *petiti* is rejected by O.-Grant, as the description apparently applies to two distinct species and cannot be accepted.

Pyromelana franciscana.

Pyromelana franciscana (Isert); Shelley, B. A. iv. p. 90; Butler, Ibis, 1905, p. 318, 1908, p. 218, 1909, p. 77.

[B. coll.] Gedaref June, **Kas.**; 3 Roseires July Sept. **Sen.**; 3 Khartoum Oct. Nov.; 1 Jebelein Nov. **W N.**; 2 Gadein Apl., 3 Wau Mch. Apl. **B.G.**; 1 Mongalla; 1 Kajo Kaji Apl. **L.E.**

[C. & L. coll.] 3 Taufikia Jan. **U.N.**

[Chr. coll.] 2 Mt. Baginzi Mch. **B.G.**

Pyromelana taha ladoensis.

Pyromelana ladoensis (Reichw.); Shelley, B. A. iv. p. 83; O.-Grant, Ibis, 1902, p. 404.

Curiously enough there are no examples of this species in these three collections, though Emin records it as abundant near Lado.

Mr. Butler informs us that one or two people told him they had seen a yellow and black *Pyromelana* on the White Nile and in the Lado Enclave, but he never came across it himself, although he kept a special look out for it.

Pyromelana ansorgei.

Pyromelana ansorgei Hartert in Ansorge's Under Afr. Sun, 1899, p. 344: Masindi, Uganda; Shelley, B. A. iv. p. 102.

Coliuspasser dubiosus Neum. J. f. O. 1905, p. 348; id. Bull. B. O. C. xxiii. 1908, p. 47.

[Chr. coll.] 1 Meridi Feb., 1 Tembura Apl. **B.G.**

These birds, both males in winter dress, are especially interesting as there are no similar examples in the British Museum. Neumann described the winter bird as a distinct species, but subsequently recognized his error and identified his *C. dubiosus* with Hartert's *P. ansorgei*.

The species is found from Shoa to Ruwenzori, and, so far as we know, has not been hitherto obtained within the limits of the Anglo-Egyptian Sudan.

***Euplectes capensis xanthomelas*.**

Pyromelana xanthomelas (Rüpp.); Shelley, B. A. iv. p. 77.

Antinori, Cat. p. 68, states that he procured examples in the country of the "Kidj Negroes," *i. e.*, Sud country between Bahr el Jebel and Bahr el Ghazal.

It has not been reported from the Sudan since, nor was it procured by Heuglin, but it is known from the highlands of Abyssinia.

***Urobrachya phœnicea*, subsp. ?**

Urobrachya phœnicea (Heugl.); Butler, Ibis, 1905, p. 317, 1908, p. 218, 1909, p. 77.

[B. coll.] 1 Dinder river Mch. Sen. ; 3 Meshra-el-Rek Mch. May, B.G. ; 1 Bor Jan. Mon. ; 1 Lado Feb. L.E.

[C. & L. coll.] 1 White Nile lat. $10\frac{3}{4}^{\circ}$ N., 1 Jebel Ahmed Agha, 2 Meshra Zeraf Jan., 6 nr. mouth of Bahr el Zeraf Feb. Mch. U.N.

All these birds, as well as those already in the British Museum from the Nile districts, are in non-breeding plumage and were taken in the first half of the year.

Heuglin, too, does not seem to have obtained any birds in breeding plumage, judging by what he states in his Orn. N.O.-Afr., although in J. f. O. 1863, p. 167 he gives a description of a male in "summer plumage" from the Sobat.

It is impossible to say with certainty whether the Sudanese birds should be referred to the Abyssinian form generally known as *U. p. traversi* or to the form occurring in Uganda which Reichenow identifies with *U. p. phœnicea*.

To settle the question it will be necessary to examine Heuglin's type, which is now impossible, and obtain breeding birds from the upper Nile districts.

Coliuspasser macrourus.

Coliuspasser macrourus (Gmel.) ; Shelley, B. A. iv. p. 49.

[B. coll.] 1 Chak Chak Feb., 3 Raffali Feb., 3 Kojali Feb. Mch. **B.G.**

[Chr. coll.] 2 Meridi Feb., 2 Mt. Baginzi Mch., 1 Yambio Apl., 2 Tembura Apl., **B.G.** ; 6 Yei Nov. Dec. **L.E.**

None of the birds in the Butler collection are in breeding plumage, but two of the Christy birds from Yei dated November are ; these do not show any distinction from West African birds.

One of the April birds from Tembura is changing to breeding plumage ; the black tail is just sprouting ; the throat is quite black and the crown is becoming so.

So far as we are aware, this species has not previously been recorded from the Bahr el Ghazal, though it has been obtained in the Niam Niam country.

Vidua serena.

Vidua serena (Linn.) ; Shelley, B. A. iv. p. 16 ; Butler, Ibis, 1908, p. 218.

[B. coll.] 5 Roseires Aug. **Sen.** ; 1 Fachi Shoya Nov. **W.N.** ; 1 Bahr el Zeraf June, **U.N.** ; 1 Giggling, 21 Mongalla, **Mon.** ; 1 Lado Feb., 1 Kajo Kaji Apl. **L.E.**

[Chr. coll.] 1 Meridi Jan., 1 Wau July-Aug. **B.G.**

Steganura paradisea verreauxii.

Vidua verreauxi Cassin, Proc. Acad. Philad. 1850, p. 56 : Abyssinia.

Steganura paradisea (Linn.) ; Butler, Ibis, 1905, p. 317, 1908, p. 218.

[B. coll.] 1 Jebel Alatarang June, **Kas.** ; 2 Roseires, **Sen.** ; 2 Jebelein Nov., 1 Kawa Nov. **W.N.** ; 1 Jebel Ahmed Agha Jan. **U.N.** ; 12 Mongalla July-Sept.

[C. & L. coll.] 4 Kamisa Dec., 3 Sennar Dec., 2 nr. Sennar Jan. Sen.; 1 Jebelein Jan. W.N.; 1 White Nile lat. 9°5, Feb., 2 Tonga Feb. U.N.

[Chr. coll.] 1 Yei Nov. L.E.

An examination of the series of the Paradise-Whydahs in the British Museum shows that birds from the southern half of Africa, including Nyasaland, Uganda, and Belgian Congo, are larger than those of the northern part of the range, including north-west and north-east Africa.

The wings of the adult males of the southern race average 85 mm. and are seldom below 80; those of the northern race average 78 mm. and are rarely above 80. As this seems to be fairly constant, it seems worth while to distinguish the two races.

The oldest name for the northern race appears to be the one here adopted. The wing of the male of the type measured by Cassin is given as 3.1 inches, which is just under 80 mm. The other distinctions given by Cassin do not seem to hold good, and he is mistaken in stating that it is a generally larger bird.

Birds from Senegambia have been separated by Neumann (Bull. B. O. C. xxi. p. 43) as *S. p. aucupum*, and are distinguished by the dark colour of the neck. From the limited material available in the Museum this would appear to be constant, but occasional birds from other parts of Africa are quite as richly coloured.

Anomalospiza butleri, sp. n.

[B. coll.] 14 ♂ 3 ♀ Kajo Kaji Apl. L.E.

The adult male comes nearest to *A. macmillani* Bannerman (Bull. B. O. C. xxix. 1911, p. 38), but is distinctly smaller (wing averages 66 mm. against 72 mm.) and has only traces of golden yellow about the forehead, the crown being washed with greenish brown; the back has somewhat broader stripes of brown and the feathers have a paler almost whitish edging (not greenish as in *A. macmillani*). The sides of the face and cheeks are also washed with brown, and are not so yellow as in the other form. The lower surface is a paler yellow than

in *A. macmillani* and is partially covered over with creamy-coloured feather-tips which look as if they might wear off later in the year, leaving a pure pale yellow under-surface.

Type, a male, collected on 8/iv./15 at Kajo Kaji, Lado Enclave, by A. L. Butler, B.M. Reg. no. 1915/12/24/1781.

Measurements of type : wing 63, tail 39, culmen 12, tarsus 17 mm.

The female appears to be identical with that of *A. macmillani*, except that it is slightly smaller. The wings of three examples measure 64, 64, and 67 mm., while that of the female of *A. macmillani* measures 68 mm., not 65 as stated by Bannerman. The wings of the males measure 64 to 65 mm., except two which are larger, 68 and 69 mm.

The whole of this fine series was taken in April, and there are indications that they are in an intermediate plumage, between a winter and a summer dress. We are strongly of opinion that when the summer dress is fully assumed, this form will differ from *A. macmillani* only in its slightly smaller dimensions.

As there are so few examples of this genus in Museum collections and so little is known about these birds, we propose to name it as a species provisionally.

Mr. Butler states in litt.:—"I found *Anomalospiza* in big flocks—habits just like *Pyromelana* with which they associate more or less. The mouth in fresh birds is remarkable. The sides of the lower mandible are dilated inwards so as to form two broad horny pads occupying most of the floor of the mouth with a narrow groove for the very small tongue between them. In the centre of the palate there is a corresponding narrow groove for the tongue to fit into, and on each side near the gape a hard circular hollow into which the crushing pads on the lower mandible fit."

It would be most interesting to know whether any similar structure is to be found in any other members of the families Ploceidæ or Fringillidæ.

Ogilvie-Grant (*Ibis*, 1913, p. 573) and Shelley (*B. Afr.* iv. p. 108) have discussed the systematic position of this

462 Messrs. Selater *and* Mackworth-Praed on [Ibis,
bird; we agree that it should undoubtedly be placed among
the Ploceidæ.

Textor albirostris albirostris.

Textor albirostris (Vieill.) ; Shelley, B. A. iv. p. 315 ;
Hartert, Nov. Zool. xiv. 1907, p. 485 ; Butler, Ibis, 1905,
p. 321.

[B. coll.] 1 Bara Apl. **Kor.** ; 2 Goz Abu Guma Mch.
 W.N. ; 1 Tawela Nov. **U.N.**

[C. & L. coll.] 2 Sennar Dec.

This and the following genus have recently been separated
from the other Weavers by important modifications of the
skull in the method of the arrangement of the orbital
foramina, and in the shape of the sternum. Mr. Chapin
(Bull. Amer. Mus. N.Y. xxxvii. 1917, p. 243) considers that
these peculiarities entitle *Textor* and *Dinemellia* to rank as a
distinct family. We have therefore placed these genera at
the end of the family Ploceidæ to emphasize this.

Dinemellia dinemelli.

Dinemellia dinemelli (Rüpp.) ; Shelley, B. A. iv. p. 311.

[B. coll.] 1 Mongalla.

Family FRINGILLIDÆ.

Fringillaria striolata.

Fringillaria striolata Licht. ; Shelley, B. A. iii. p. 161.

Emberiza septemstriata (nec Rüpp.), Butler, Ibis, 1908,
p. 217, 1909, p. 393.

[B. coll.] 1 Khor Arbat May, 2 Erba Mch., 1 Erkowit
 Mch. **R.S.**

[C. & L. coll.] 3 Sinkat Mch. **R.S.** ; 1 Omdurman Mch.
 Kh.

Fringillaria septemstriata septemstriata.

Fringillaria septemstriata (Rüpp.) ; Shelley, B. A. iii.
p. 162 ; Butler, Ibis, 1905, p. 315.

[B. coll.] 1 Setit river May, **Kas.** ; 1 Jebel Fazogli May,
 Sen.

Fringillaria septemstriata goslingi.

Fringillaria goslingi Alexander, Bull. B. O. C. xvi. 1906, p. 124: Welle river.

[Chr. coll.] Meridi Feb. **B.G.**

The Rock-Bunting of the Bahr el Ghazal is undoubtedly referable to this race recently described by Alexander, which ranges from Northern Nigeria to the upper Welle. It has not previously been recorded from the Sudan.

Fringillaria reichenowi.

Fringillaria reichenowi Wettstein, Anz. K. Akad. Wien, 1915, No. 13, pp 131-135: Jebel nr. Kadugli, S. Kordofan.

An apparently distinct species, not at present represented in either these or the Museum collections.

Emberiza affinis.

Emberiza affinis Heugl.; Shelley, B. A. iii. p. 148.

Emberiza flavigastra nec Rüpp., Butler, Ibis, 1908, p. 216.

[B. coll.] 1 Pongo river Feb., 2 Raffali Feb. **B.G.**

[Chr. coll.] 2 Yei Dec. **L.E.**

Emberiza flaviventris flavigastra.

Emberiza flaviventris flavigastra Rüpp.; Zedlitz, J. f. O. 1911, p. 142.

Emberiza flaviventris (Vieill.) ; Shelley, B. A. iii. p. 143 (part.).

Emberiza flavigastra Rüpp.; Butler, Ibis, 1905, p. 314.

[B. coll.] 1 Setit river, **Kas.**; 1 Jebel Melbis Apl. **Kor.**

[C. & L. coll.] 3 Kamisa Dec. **Sen.**

This form, tentatively recognized by Reichenow, seems to be separable as a slightly paler race of *E. f. flaviventris*. It is confined to northern Abyssinia, Eritrea, and the drier parts of the Sudan.

Emberiza cabanisi cabanisi.

Emberiza cabanisi (Reichw.) ; Shelley, B. A. iii. p. 150.

[Chr. coll.] 1 Meridi Feb., 1 Tembura Apl. **B.G.**

So far as we can ascertain, no examples of this bird have

464 Messrs. Selater *and* Mackworth-Praed *on* [Ibis,
been recorded from the Sudan, though Emin met with it at
Tingasi. It was described from Cameroon.

Emberiza cinerea semenowi.

Emberiza (Hypocentor) semenowi Sarudny, Ornith. Jahrb.
xv. 1904, p. 217 : Arabistan, Persia.

[C. & L. coll.] 3 Erkowit, Apl. R.S.

These birds undoubtedly belong to this race of *E. cinerea*, which is strongly washed with greenish gold beneath. These specimens, 2 ♂ and 1 ♀, confirm what Selater states in 'The Ibis,' 1917, p. 147, as regards the sexual distinctions.

Zedlitz (J. f. O. 1911, p. 42) obtained an example of *E. cinerea* at Keren in Bogosland, where Heuglin is also stated by Reichenow to have obtained a young bird. Whether these are *E. c. cinerea* or *E. c. semenowi* remains to be proved, and should they turn out to be true *E. c. cinerea*, then our birds will be the first record of *E. c. semenowi* from Africa.

Emberiza caesia.

Emberiza casia Cretschm.; Shelley, B. A. iii. p. 155 ;
Butler, Ibis, 1905, p. 314, 1908, p. 217.

[B. coll.] 1 Shendi Mch. Ber. ; 1 Erkowit Mch. R.S. ;
7 Khartoum Dec.

[C. & L. coll.] 1 Erkowit Mch. R.S. ; 1 Sennar, 1 Kamisa
Dec. Sen. ; 1 Hassania island Jan. W.N.

Emberiza hortulana.

Emberiza hortulana Linn. ; Shelley, B. A. iii. p. 154 ;
Butler, Ibis, 1905, p. 314.

[B. coll.] 1 Erkowit Apl. R.S. ; 1 Khartoum Oct.

Serinus mozambicus * barbatus.

Crithagra barbata Heuglin, J. f. O. 1864, p. 248 : Djur,
B.G.

Serinus butyraceus (pt.), Shelley, B. A. iii. p. 193.

Serinus icterus (nec Vieill.), Butler, Ibis, 1908, p. 217,
1909, p. 77.

* For use of this name see *antea*, p. 242.

[B. coll.] 1 Menyah, 1 Wau Jan., 1 Chak Chak Feb.,
1 Dug Dug May, B.G. ; 1 Sheikh Tombé, Mon. ; 1 Kajo
Kaji Mch. L.E.

[Chr. coll.] 1 Meridi Feb., 1 Tembura Apl. B.G. ; 3 Yei
Nov. L.E.

Serinus mozambicus aurifrons.

Fringilla (Dryospiza) aurifrons Heuglin, Syst. Uebers.
in SB. Akad. Wien, 1856, p. 293 [nom. nud.].

Serinus butyraceus pt., Shelley, B. A. iii. p. 193.

[B. coll.] 12 Roseires July-Sept., 1 Jebel Fazogli May,
Sen.

We have examined the examples of *Serinus mozambicus* in
the Museum, and find that the following races seem fairly
distinct:

1. *SERINUS MOZAMBICUS MOZAMBICUS* (P. L. S. Müll.) :
S. Africa.

Dusky brown above, strongly streaked with dark brown.
Tail-feathers tipped with white or yellowish white.

Range. South Africa north to the eastern parts of British
East Africa, Nyasaland and Rhodesia.

2. *SERINUS MOZAMBICUS TANDO*, subsp. n.

Differs from *S. m. mozambicus* in being distinctly greener
above and with rather fine streaking on the back ; tail-
feathers, if tipped at all, very slightly with yellowish.

Type, a male from Ndala Tando, north Angola, col-
lected by Dr. W. J. Ansorge 16/ix./08. B.M. Reg. no.
1910/5/6/1300.

Range. Northern Angola. A bird from the Dikulwe
Valley, Belgian Congo (*Neave*), would appear to belong
to this form.

3. *SERINUS MOZAMBICUS PUNCTIGULA.*

Serinus punctigula Reichenow, O. M. 1898, p. 23 :
Cameroon.

Differs from *S. m. mozambicus* and *S. m. tando* in having a
bright greenish back with very faint streaking. The crown
is green as in the last two races, and the tail is slightly
tipped with yellow.

Some examples, possibly young or possibly in non-breeding plumage, have a white chin and distinct spots of black on the throat, and it was on these characters that the species was distinguished by Reichenow.

Range. Cameroon. There is a good series of this form collected by Bates in the Museum.

4. *SERINUS MOZAMBICUS BARBATUS.*

Crithagra barbata Heuglin, J. f. O. 1864, p. 248: Djur, B.G.

Resembles *S. m. punctigula*, but is distinctly a brighter yellow below and on the forehead and wing-coverts. It is very close to *S. m. punctigula*.

Range. Bahr el Ghazal east to M'ongalla and Lado, westwards to the Krebeji, French Congo (*Alexander*), and south to Ruwenzori and Uganda.

5. *SERINUS MOZAMBICUS AURIFRONS*, subsp. n. (ex Heugl. Syst. Uebers in SB. Akad. Wien, 1856, p. 293: Sennar.)

This form comes near *S. m. barbatus*, but is considerably paler and greyer on the back, and the yellow of the lower parts, forehead, and tips of the wing-coverts is also paler. The tips of the tail-feathers are whitish yellow, and the yellow of the forehead is generally much broader. The moustache-streaks are finer and less pronounced.

We have adopted Heuglin's name, which is without description, for this form, and this must be regarded as its first description.

Range. Sennar and probably Kassala, extending to north Abyssinia.

The birds from Shoa and south Abyssinia should probably be referred to this form. They appear to be slightly darker and with less yellow on the forehead than the more northern birds; but the specimens are not in sufficiently good condition to be certain. They are, however, easily distinguishable from *S. m. barbatus*, with which they were identified by Neumann (J. f. O. 1905, p. 354) and O.-Grant (Ibis, 1913, p. 583).

6. *SERINUS MOZAMBICUS HARTLAUBI.*

Crithagra hartlaubi Bolle, J. f. O. 1858, p. 355: W. Africa.

This form is at once distinguished by its grey head.

Range. Senegal to northern and southern Nigeria.

With regard to *Serinus madaraszi* Reichw. O. M. 1902, p. 8, from north of Lake Nyasa, we have no specimens which in any way approach his description, all the Nyasaland birds before us being indistinguishable from those from South Africa. From its description, however, it would seem quite a distinct form.

The birds from St. Thomas Island which were identified by Bannerman (*Ibis*, 1915, p. 101) as *Serinus hartlaubi*, have no sign of grey on the head and do not exactly agree with any mainland race.

Poliospiza leucopygia leucopygia.

Serinus leucopygius (Sundev.); Shelley, B. A. iii. p. 216.

[B. coll.] 1 Shasheina nr. Gedaref May, Kas.; 2 Roseires Aug. Sen.; 2 Mongalla.

[C. & L. coll.] 5 Kamisa Dec. Sen.; 1 nr. Jebelein Jan. W.N.

The birds from Mongalla are whiter and paler than those from Roseires and approach *P. l. riggenbachii* Neumann (Bull. B. O. C. xxi. 1908, p. 44: Dakar).

There would appear to be no structural differences which can be used to separate *Poliospiza* from *Serinus*. We propose therefore to follow Reichenow, and to call all birds which are green above and yellow below *Serinus* and the rest *Poliospiza*.

Poliospiza gularis elgonensis.

Poliospiza elgonensis O.-Grant, Bull. B. O. C. xxxi. 1912, p. 17: Mt. Elgon.

Poliospiza canicapilla Butler (nec Du Bus), *Ibis*, 1908, p. 218.

[B. coll.] 1 Bringi's Jan. B.G.

[Chr. coll.] 4 Yei Nov. & Dec. L.E.; 1 Yambio Mch. B.G.

In working out the races of *P. gularis*, we found that one or two other species had at different times been confused with it. These were *Poliospiza tristriata* Rüpp. from Somaliland and Abyssinia, which can always be distinguished by its smaller size, wing 65 mm. against 75 or over, and the fact that no white shows through on the crown;

and *P. mennelli* Chubb from Nyasaland which, at any rate in the adult, has jet-black ear-coverts.

The races we find to be as follows :—

1. *P. GULARIS GULARIS*.

Linaria gularis Smith, Rep. S. Afr. Exped. 1836, p. 49 : Latakoo.

The type, which is in the Museum collection, obviously belongs to the Transvaal race with little spotting on the throat. Smith (*op. cit.*) says "inhabits the colony as far north as Latakoo," near Kuruman, Bechuanaland. We therefore designate Latakoo as the particular type-locality.

P. g. transvaalensis Roberts, J. S.A. Orn. Union, ix. 1913, p. 36 : Pretoria, then becomes a synonym.

White patch on throat larger, with less black spotting. Underparts as a rule paler. Size slightly larger, wing average 78 mm.

Range. Bechuanaland and Transvaal north to Mashonaland and Matabeleland.

2. *P. G. STRIATICEPS*.

Poliospiza striaticeps Hartl. in Layard's Birds of S. Africa, 1867, p. 203 : Swellendam, in C. Colony.

White patch on throat smaller, spotting more pronounced. Underparts more dusky. Size slightly smaller, wing average 76 mm.

Range. Cape Colony east to Natal.

3. *P. G. REICHARDI*.

Poliospiza reichardi Reichenow, J. f. O. 1882, p. 209 : Kakoma, Germ. E. Afr.; *Poliospiza striatipectus* Sharpe, Ibis, 1891, p. 258 : Elgeyu, Brit. E. Afr.; and *Serinus melanochrous* Reichw. O. M. viii. 1900, p. 122 : Ukinga, north of L. Nyasa, appear to be synonyms.

Exceedingly like *P. g. gularis*, and possibly identical with it. All three names were founded on young birds with streaked breasts. The streaks, however, appear to be slightly larger and the upper parts slightly richer brown than in the young of the typical race. There is only one adult skin in the Museum, in bad condition.

Range. Southern German East Africa, through Rhodesia and Nyasaland to the Eastern Belgian Congo.

It is quite possible that the young of *P. mennelli* Chubb lack the black ear-coverts and closely resemble this race.

4. *P. g. ELGONENSIS.*

Poliospiza elgonensis O.-Grant, Bull. B. O. C. xxxi. 1912, p. 17 : Mt. Elgon.

Similar to *P. g. gularis* and *P. g. reichardi*, but with the white throat-patch much less distinctly defined. The young birds rather more finely streaked on the breast.

Range. Mt. Elgon to the Lado Enclave and southern Bahr el Ghazal, west to N. Nigeria. Birds from the latter locality procured by Alexander are slightly lighter, and are probably intermediate with the next race.

5. *P. g. CANICAPILLA.*

Poliospiza canicapilla Du Bus, Bull. Ac. R. Bruxelles, 1855, p. 151 : Senegal.

We have no specimens of this race, but it would appear to be somewhat smaller than the eastern races—wing 73–75 mm. against 78–85 mm. in *P. g. elgonensis*—and also, from Shelley's description of the type (B. Afr. iii. p. 228), distinctly paler underneath. We suspect that the type of *P. flegeli* Hartert (J. f. O. 1886, p. 583 : Loko, Benue R.) is, like the Alexander birds, intermediate between *P. g. elgonensis* and *P. g. canicapilla*.

Range. Senegal, possibly to Lower Nigeria.

6. *P. g. ERLANGERI.*

Poliospiza erlangeri Reichw. O. M. 1905, p. 146 : Ladscho, Arussi, Gallaland.

Distinctly darker, and with the streaking above and below broader and more pronounced.

Range. Abyssinia.

It may be mentioned that some, if not all, of these races breed while still in the striped plumage. Major Christy procured birds in the Lado Enclave of which two were in the plain adult dress, two in the juvenile streaked dress, and one somewhat intermediate.

Passer (Sorella) emini-bey.

Sorella emini-bey Hartlaub, J. f. O. 1880, p. 211 : Lado.

Passer emini (Hartl.) ; Shelley, B. A. iii. p. 256 ; Butler, Ibis, 1909, p. 77.

[B. coll.] 1 Mongalla, 1 Meshra-el-Rek May, B.G.

As this species has so distinct a type of plumage, it seems more satisfactory to separate it from *Passer* under the subgenus specially characterized for it by Hartlaub.

Passer (Auripasser) luteus.

Passer luteus (Licht.) ; Shelley, B. A. iii. p. 258 ; Butler, Ibis, 1905, p. 315.

[B. coll.] 1 Shendi Mch. Ber. : 20 Khartoum Apl. May
June Sept. ; 4 Bara Apl. Kor.

[C. & L. coll.] 5 White Nile lat. $13\frac{3}{4}^{\circ}$ – 15° N. Jan.

Passer jagoensis cordofanicus.

Passer cordofanicus Heuglin, Orn. N.O.-Afr. Suppl. 1871, p. cxli : Kordofan ; Shelley, B. A. iii. p. 247.

[B. coll.] 3 Mongalla.

We consider that this bird is more closely allied to *P. jagoensis* from the Cape Verde Is. than to *P. motitensis* from southern Africa, of which it has generally been considered a subspecies.

Passer domesticus arboreus.

Passer arboreus Bonaparte, Consp. Av. i. 1850, p. 510 (*ex* Licht. MS. in Berlin Mus.) : Sennar.

Passer rufidorsalis Brehm, Naumannia, 1856, p. 376 : Khartoum.

Passer domesticus [part], Shelley, B. A. iii. p. 239 ; Butler, Ibis, 1905, p. 315.

[B. coll.] 10 Khartoum Feb. Apl. Oct. Nov. Dec.

[C. & L. coll.] 3 Singa Dec. Sen. ; 13 White Nile lat.
 $13\frac{3}{4}^{\circ}$ – 15° N. Jan.

A single example collected by Mr. Butler at Khartoum is washed all over with a strong reddish tinge. We had thought it to be merely artificial, but Mr. Butler informs us

that this is not so, and that it is a true example of natural erythrism. He knew the bird while alive quite well, and is convinced that it could not have been handled, and also on skinning it the whole under surface of the skin was found to be of a rich pink colour, deepening into carmine under the wings and in other places.

Passer griseus eritreæ.

Passer diffusus nec Smith, Butler, Ibis, 1905, p. 315, 1908, p. 217, 1909, p. 77.

[For other references, see below.]

[B. coll.] 2 Setit R. May, Kas. ; 5 Roseires, July-Sept. Sen. ; 1 Jebel Melbis Apl. Kor. ; 1 Chak Chak Feb., 6 Wau Jan. Mch. B.G. ; 2 Mongalla.

[C. & L. coll.] 4 Kamisa, 2 near Sennar, Sen. ; 2 Kosti, W.N. ; 1 Bahr el Zeraf, U.N.

[Chr. coll.] 1 Meridi Jan., 1 Tembura Apl. B.G. ; 1 Yei Dec. L.E.

Passer swainsoni swainsoni.

[For references, see below.]

1 Port Sudan Apl. R.S.

Passer griseus and its allies.

We have gone carefully through the large series of these Grey Sparrows in the British Museum, and have come to the following conclusion as regards the species and races.

PASSER GRISEUS GRISEUS.

Fringilla grisea Vieill. Nouv. Dict. xii. 1817, p. 198 : United States ! [Senegal, apud Lafr. Rev. Zool. 1839, p. 95].

Pyrgita gularis Less. Rev. Zool. 1839, p. 45 : Senegal.

Passer occidentalis Shelley, Ibis, 1883, p. 548 : ? Niger.

Passer diffusus thierryi Reichw. O. M. 1899, p. 190 : Mangu, N. Nigeria.

This race extends from Senegal to northern Angola and through Nigeria, Cameroon, and French and Belgian Congo to N. Rhodesia.

Back reddish brown ; underside greyish white ; abdomen almost white. Wing 78-88 mm.

Shelley founded his type of *P. occidentalis* on an unlabelled bird ; but in the 'Birds of Africa,' iii. p. 254, he says it came from Lukoja, Nigeria.

2. PASSER GRISEUS DIFFUSUS.

Pyrgita diffusa Smith, Rep. S. Afr. Exped. 1836, App. p. 53 : N. of Orange R.

Fringilla spadicea Licht. Verz. Vög. Kaffernl. 1842, p. 15 : E. Cape Colony.

Passer griseus georgicus Reichw. Vög. Afr. iii. p. 231 : Damaraland.

Range. Africa south of the Zambesi.

Back lighter and duller brown ; underparts more dusky. Wing 78-85 mm.

Damaraland birds can be matched exactly by birds from the N.E. Transvaal.

3. PASSER GRISEUS SUAHELICUS.

Passer griseus suahelicus Reichw. Vög. Afr. iii. p. 231 : German East Africa.

Range. German East Africa and Nyasaland, north along the coast to Lamu in British East Africa, where it occurs side by side with *P. gongonensis* Oust. The latter therefore must be considered a different species.

Back a little brighter than in *P. g. diffusus*, but a hardly definable race. It is really intermediate between *P. g. diffusus* and the next race. Hardly distinguishable from *P. g. griseus*, except that the underparts are usually duskier. Wing 83-90 mm.

4. PASSER GRISEUS UGANDÆ.

Passer diffusus ugandæ Reichw. O. M. 1899, p. 190 : Uganda.

Range. Uganda. Ruwenzori and eastern Congo birds approach the West African race.

Back brighter than in the other races, and the crown browner and less grey. Wing 83-88 mm.

5. PASSER GRISEUS ERITRÆ.

Passer griseus eritræ Zedlitz, J. f. O. Jan. 1911, p. 33 : W. Eritrea and Sudan.

? *Passer nikersoni* * Madarász, Ann. Mus. Nat. Hung. June 1911, p. 341 : between Dinder R. and Blue Nile.

Passer albiventris Madarász, Ann. Mus. Nat. Hung. June 1911, p. 342 : Sudan.

Range. From Eritrea throughout the region of the Blue and White Niles to the western Sudan and N. Nigeria.

Separable from any other race by its considerably whiter throat and underparts (see J. f. O. 1911, pl. 1). Wing 82–86 mm. In the western limits of its range it merges into *P. g. griseus*, and the name *P. diffusus theierryi* Reichw. was probably given to the intermediate form. Birds from the Bahr el Ghazal are also duskier, and are probably intermediate with *P. g. griseus* or *P. g. ugandæ*.

The Museum is unfortunately very deficient in material from Senegal, and it is possible that fresh skins may show the Senegal bird to be the same as the Eritrean form. In that case this form would become *P. g. griseus*, and *P. occidentalis* of Shelley would stand for the race from the rest of West Africa.

We have no specimens so small as *Passer nikersoni* of Madarász, and are inclined to think it will prove to be a young bird of this race.

6. *PASSER GRISEUS NEUMANNI*.

Passer griseus neumanni Zedlitz, O. M. 1908, p. 180 : Salamona.

Range. Sandy coast region of Somaliland, northwards to Eritrea.

Differs from *P. g. griseus* in having somewhat lighter underparts, though not so light as in *P. g. eritreæ*. They have, however, especially on the under tail-coverts, a distinctly yellowish tinge. Wing 82–86 mm.

The Museum has examples from Somaliland collected by Lort Phillips and Gillett.

Of the above-mentioned races, *P. g. eritreæ* and *P. g. neumanni* are easily distinguishable ; *P. g. diffusus* fairly so ;

* *nikersoni* is a *lapsus calami* for *nickersoni*. Nickerson was Governor of the Sennar Province, and was killed by a fall from his horse (A. L. B. in litt.).

and *P. g. ugandæ*, *P. g. suahelicus*, and *P. g. griseus* are so close that only in a large series can any difference be detected.

PASSER SWAINSONI SWAINSONI.

Pyrgita swainsoni Rüpp. N. Wirb., Vög. 1835, p. 94, pl. 33. fig. 2 : N.E. Africa.

? *Pyrgita crassirostris* Heugl. J. f. O. 1867, p. 299 : Fazogli.

Passer griseus abyssinicus Neum. Bull. B. O. C. xxi. 1908, p. 70 : Mareb R.

We think it necessary to keep this bird as a separate species. It appears not to interbreed with any races of the low-ground *P. griseus*, and in Somaliland and Eritrea seems to occur side by side with them.

Underparts uniform dusky, with traces of lighter colour on the throat and abdomen. The under tail-coverts with dark centres and light edges, giving a mottled appearance. Wing 85–90 mm.

Range. Highlands of Abyssinia, Eritrea, and Somaliland.

A single bird from Port Sudan in the Butler collection would appear to be somewhat distinct. It is smaller, wing 80 mm.; underside clearer grey; back greyer brown; head lighter grey. More material from that locality is desirable.

We think that the name *Pyrgita crassirostris* of Heuglin is referable to the present form and was based on a particularly brightly coloured specimen. The description precludes its being *P. g. eritreæ*, which is the form one would expect to occur at Fazogli; and the size, not to mention the locality, precludes its being *P. s. gongonensis* as Shelley suggests.

PASSER SWAINSONI GONGONENSIS.

Pseudostruthus gongonensis Oust. Le Naturaliste, 1890, p. 274 : Gongoni.

Range. From the coast of British East Africa inland to Baringo.

Larger than *P. s. swainsoni*, and with a considerably thicker bill. Underparts completely uniform, often with a tinge of rust-colour. Wing 95–100 mm.

At Lamu this bird occurs side by side with a race of

P. griseus. Birds from the Omo river are somewhat intermediate with *P. s. swainsoni*.

***Passer simplex simplex*.**

Fringilla simplex Licht. Verz. Doubl. 1823, p. 24: Ambukokl = Ambigol, Dongola.

This species occurs in Kordofan and Dongola. It is not represented in the Butler or Chapman & Lynes collections, nor are there specimens in the British Museum.

***Carpospiza brachydactyla*.**

Petronia brachydactyla Bonaparte, Consp. Av. i. 1850, p. 513: Konfuda, Arabia (*Hartert*) ; Heuglin, Orn. N.O.-Afr. i. 1871, p. 624.

Carpospiza brachydactyla (Bp.) ; Hartert, V. p. F. p. 145.

[B. coll.] 1 nr. Khartoum Dec. ; 1 nr. El Dueim Jan. **W.N.**

[C. & L. coll.] 3 Erkowit Mch. & Apl., 1 Port Sudan Apl. **R.S.** ; 1 Blue Nile Dec. **Sen.** ; 9 White Nile lat. 14° N. Jan., 2 Jebelein Jan. **W.N.**

This species was obtained by Heuglin on the Abyssinian coast, along the Mareb river on the borders of Kassala, and in Kordofan. After that it was lost sight of in Africa until met with by Zedlitz near Keren in Eritrea (J. f. O. 1911, p. 37). It is in all probability a migrant from western Asia, where it ranges to Persia.

***Petronia pyrgita pallida*.**

Gymnorhis pyrgita pallida Neumann, Bull. B.O.C. xxi. 1908, p. 70: Shendi.

[B. coll.] 6 Fatasha nr. Khartoum Feb. Nov.

The type of this subspecies, which is clearly distinct from the typical form, came from Shendi. There was previously only one example in the British Museum, which was obtained by Capt. Dunn in the Haraza hills in the north of Kordofan.

***Petronia pyrgita pyrgita*.**

Petronia pyrgita (Heuglin) ; Shelley, B. A. iii. p. 263.

This species, of which the Museum contains a long series

from Eritrea, Abyssinia, and northern Somaliland, was described by Heuglin from eastern Sennar. There are no examples in the Butler collection or in the British Museum from within the boundaries of the Sudan, though there is no reason to doubt its occurrence within its limits.

Petronia dentata dentata.

Petronia dentata (Sund.) ; Shelley, B. A. iii. p. 261.

[B. coll.] 3 Roseires Aug. Sept. Sen. ; 1 Pongo R. Feb.,
3 Chak Chak Feb. Mch., 2 Wau Mch. Apl., 3 Raffali
Feb. B.G.

[C. & L. coll.] 8 Kamisa Dec. Sen. ; 3 Melut Jan.,
1 Mouth of Sobat R. Jan., 1 Kodok Mch., 2 Renk
Mch. U.N.

We have examined the whole series of this species in the Museum collection, but have failed to find any sufficiently distinctive racial characters, except in the case of two immature birds from southern Abyssinia which have already been commented on by O.-Grant (Ibis, 1913, p. 580), though he does not state that they are considerably darker than the typical form which probably came from Eritrea. The Roseires birds are somewhat paler than the Bahr-el-Ghazal birds in the Butler collection, but this may very likely be seasonal.

Erythrospiza githaginea githaginea.

Erythrospiza githaginea (Licht.) ; Shelley, B. A. iii.
p. 170.

[C. & L. coll.] 2 Jebel Okum nr. Sinkat Mch. R.S.

The Sudan is rather south of the range of this bird, though Brehm found it plentiful in the Bajuda desert south of Dongola. There is one other specimen in the Museum from Kerma, near the 3rd Cataract in Berber Province. It has not apparently been previously recorded from the Red Sea Province, but Mr. Butler informs us that he has met with it in flocks and has shot specimens at Jebel Erba and Jebel Karbosh, both in the Red Sea Province.

[To be continued.]

XXIV.—*Further Notes on Birds observed at Alix, Buffalo Lake, and Red Deer in the Province of Alberta, Canada, in 1915 and 1916.* By CHARLES B. HORSBRUGH, Canadian Army Medical Corps, B.E.F.

THESE additional notes on the birds of Alix, Buffalo Lake, Red Deer, and other districts (*vide* 'Ibis,' 1915, pp. 670-689) are the result of my change of residence to Red Deer in October 1915, and better opportunity to extend my observations over a wider territory. During the early spring and summer of 1916 the weather was, as in the previous year, disagreeably wet, and snow fell early in November. Red Deer, which lies nearly halfway between Edmonton and Calgary, is as well-wooded, watered, and hilly as the Alix country, and offers a good field for ornithological study. It lies 2860 feet above sea-level. A Natural History Society has been in existence for a few years, the reports of which are published annually in the Journal of the Government Agricultural Society.

The nomenclature and classification, as in the previous paper, are that of the A.O.U. Check-List.

Æchmophorus occidentalis. WESTERN GREBE. I visited the same colony reported in my notes for 1914 on 28 May, 1915, finding plenty of nests with full clutches and birds as numerous as in the previous season. I received a specimen picked up alive near Red Deer on 17 November, which died next day. Mr. P. A. Taverner, of the Victoria Memorial Museum, Ottawa, writes me as follows:—"One of the Western Grebe's skins is an interesting bird, being the form *clarkii*, originally described as an independent species but now regarded as a variant form of the Western. It is characterized by its smaller size, different coloration of lores and bill, and by having a recurved bill like the Avocet." My knowledge of this subspecies is insufficient to add anything to the above.

Gavia immer. GREAT NORTHERN DIVER. A single specimen was seen on a large lake a few miles south of Alix on 3 April,

1915. On 30 May I received a female, with ovaries greatly enlarged, which was shot close to the above village. Four birds were reported seen on Alix Lake on 14 August—probably parents and young. On 3 September a single bird still remained.

Larus argentatus. HERRING-GULL. On 24 May, 1915, I saw a pair of these Gulls at Buffalo Lake, and on the 29th I shot an immature specimen. Whilst exploring an island near the lake's head, Mr. George Cook stated that in previous years Herring-Gulls formerly bred at its northern point, as well as Common Terns, but I found no signs of nesting, although a few birds of both species were in the neighbourhood.

Larus franklini. FRANKLIN'S GULL. On 21 April, 1915, I saw two, and eight on the 22nd, after which date they became common, but I think they had decreased in numbers compared with last season's observations. On 30 June, 1916, I visited Spotted Lake with the Rev. H. M. Holdom, to show him the gullery. We had a heavy thunderstorm, and head-winds made rowing very arduous work. We found many nests and young in down, and a remarkable number of Pied-billed Grebes' nests scattered thickly amongst the Gulls' nests. Four seemed to be the average clutch of the former species. The young gulls, when handled, vomited a mass of insects, identified as grasshoppers and dragonflies. I reared one bird, which is now in the Banff Zoo. On 19 July, 1916, I observed a small flock numbering about fifteen birds migrating south, high over the town of Red Deer.

Sterna hirundo. COMMON TERN. This species appeared to be more abundant than during the previous season in the Alix district.

Phalacrocorax auritus. DOUBLE-CRESTED CORMORANT. Mrs. Cassels called my attention to a single bird, probably of this species, flying over Sylvan Lake on 20 May, 1915. I have been informed that this Cormorant breeds on a lake near Edmonton, but I could not find if this was really the case.

Anas platyrhynchos. MALLARD. This was the first species of duck I found nesting this year (1915), picking up four eggs, probably destroyed by crows, in the large slough opposite my house, on 1 May.

MALLARD $\times$ PINTAIL. Although a hybrid of these two species in captivity is not a great rarity, I imagine that such a cross in a wild state must be very uncommon. A beautiful specimen was presented to me by a friend, who shot it near the town on 28 October, 1916. The characteristics of the Mallard and Pintail males are very evenly divided, and the bird was in prime condition. Dissection as well as external details proved it to be a male. Weight 2 lb. 13 oz. Length $24\frac{1}{2}$ inches. Wing-joint to longest primary $11\frac{1}{2}$ inches. Eye brown. Legs dull creamy buff, too small for an ordinary Mallard. Bill dusky black along centre, slate on sides.

Mareca americana. AMERICAN WIDGEON. I did not discover eggs of this bird during last season, but was fortunate to do so on 3 May, 1915, when visiting the north end of Buffalo Lake. The nest contained nine eggs, quite fresh.

Dafila acuta. PINTAIL. I found two Pintails' nests of eight eggs each, with a plentiful supply of down—the first in a small patch of bush close to the Mirror trail on 24 May, 1915, and the other on the same date at Buffalo Lake. This latter was situated on a small rise close to a shallow pond, which the male bird seemed loath to leave. 13 April is my earliest record for their appearance in 1916.

Marila valisineria. CANVASBACK. I secured a fine male near my house with my .22 rifle on 21 April, and at the present date of writing (15 January, 1916) have a pair alive in my cellar at Red Deer, together with a male Pochard. The nest from which these specimens came was looted by crows. The majority of the nests I met with this season held Pochards' eggs mixed with those of the rightful owners. The female Canvasback was presented to the Zoo at Bauff; the males of both the above species unfortunately died.

Clangula clangula americana. AMERICAN GOLDEN-EYE. I flushed a male Golden-eye from a small stream on 1 April, 1915, whilst riding into Alix; and on 30 June, when punting towards the Spotted Lake gully, the Rev. H. M. Holdom and I saw a female with four downy youngsters swimming in the creek. This species Cook and I observed in numbers at Buffalo Lake during the month of June.

Charitonetta albeola. BUFFLE-HEAD. I saw a single male on 10 April near my house, but beyond an empty nest in the usual situation I did not succeed in finding any eggs, although several young broods were observed.

Oidemia deglandi. WHITE-WINGED SCOTER. My efforts to shoot a specimen were futile, as the species unless killed outright can dive and stay submerged like a turtle. Mr. James Brindle, however, brought me a fine male, shot at Buffalo Lake on 19 June, 1915, where they were to be found in hundreds. By 15 August the Lake seemed to be almost deserted.

Erismatura jamaicensis. RUDDY DUCK. The Ruddy Duck appeared to be more abundant at Buffalo Lake and neighbourhood than in the previous season.

Chen hyperboreus nivalis. GREATER SNOW-GOOSE. I saw two specimens shot near the town on 4 November, 1916. One was immature. Length 27 inches.

Anser albifrons gambeli. WHITE-FRONTED GOOSE. At the local birdstuffer's shop I was shown a mounted specimen, obtained at Ponoka in October 1915.

Branta canadensis canadensis. CANADA GOOSE. On 17 March, 1915, a farmer near Alix showed me five Canada Geese which he kept as decoys, finding them most useful. He had discovered the nest in 1912, placed on a musk-rat house at Buffalo Lake. A number of these Geese appeared on the slough opposite my house on 1 April, and some would undoubtedly have bred there had not local gunners driven them away. The last pair remained till 1 May.

Ardea herodias herodias. GREAT BLUE HERON. Another farmer brought me a fine male specimen of the Great Blue Heron on 4 May, 1915, which he had shot at dusk, presumably for a Goose, near Alix. Length taped, 45 inches; wing spread, 70 inches. Gullet contained several large newts. An immature specimen was sent me on 30 May from south of Alix. I observed a single bird at Buffalo Lake on 15 August.

Grus mexicana. SANDHILL CRANE? I noticed a bird which I suspect to have been a Sandhill Crane flying over myhouse at Alix on 4 May, 1915, but it was too distant to determine the exact species.

Porzana carolina. SORA. Like my similar experience the previous year, I picked up a Sora, killed by the telegraph-wires near Alix, on 29 July, 1915.

Steganopus tricolor. WILSON'S PHALAROPE. Opposite my house I saw several pairs of Wilson's Phalarope on the slough on 19 May, 1915, and after three days' careful hunting discovered a nest with four eggs close by. I flushed the male bird off the nest several times; it was joined on each occasion by its mate, and both became noisy but fairly tame. This species seemed rare the following year, as I only saw a single bird (female) at Buffalo Lake although I hunted diligently. I shot a male near Red Deer on 6 July, 1916, with plumage much worn. A female was also observed as she pursued the former round a large slough.

Recurvirostra americana. AVOCET. Whilst travelling with Cook to his house at Buffalo Lake on 24 May, 1915, we found an Avocet's nest containing eight eggs. This was placed on a small sandy promontory jutting out into a large pond. On the edge of a lake near Bashaw, we discovered another nest with five eggs on 27 May. Cook has several times in past seasons found more than the average clutch in one nest.

Macrorhamphus griseus griseus. DOWITCHER. Cook brought me the skin of a Dowitcher shot at Buffalo Lake on 22 August, 1915. During the following season most of the Waders were scarce, and I have no further notes of this species, which I have not personally seen.

Pisobia minutilla. LEAST SANDPIPER. I saw about half-a-dozen near Brindle's house, Buffalo Lake, on 15 August, 1915, feeding in company with a few pairs of Killdeer and Greater and Lesser Yellow-legs.

Totanus melanoleucus. GREATER YELLOW-LEGS. I received a Greater Yellow-legs on 26 September, 1915, from Mr. W. Pettet, of Alix. Throughout the season, particularly during the earlier months, this species was fairly frequently observed and occasionally the Yellow-legs (*Totanus flavipes*) was met with both in the vicinity of the village and Buffalo Lake.

Catoptrophorus semipalmatus semipalmatus. WESTERN WILLET. This species yearly frequents Buffalo Lake and its neighbourhood in small numbers, and I saw two pairs on 25 May, 1915. On the 30th of the same month, whilst driving to his home with Cook, we noticed a Crow flying over a grassy meadow near the lake closely pursued by a Willet. We at once proceeded to search for a nest, and wasted almost an hour before I accidentally discovered it. The female had placed it close to a whitened (shoulder-blade) bone of a buffalo, and but for this error my eye would not have been led to the spot. So close did she sit that, after calling up Cook, the bird actually allowed me to lift her off her four beautiful eggs. Cook informed me that for many years he had sought the eggs of this species, but had never experienced my luck. We let the poor bird escape, after photographing the nesting-site.

Bartramia longicauda. UPLAND PLOVER. I noticed a pair of Upland Plover near Cook's house, on the ploughed lands, on 27 May, 1915.

Numenius hudsonicus. HUDSONIAN CURLEW. These birds are by no means numerous, and I saw but one pair at Buffalo Lake on 25 May, 1915.

Charadrius dominicus dominicus. GOLDEN PLOVER. On 11 October, 1916, Cook sent me two specimens from Buffalo Lake, but they were immature and a bit too badly shot to accurately determine the sex.

Oxyechus vociferus vociferus. KILLDEER. One of the commonest of the Plovers in this part of the Province. Between Cook's house and Mirror we found a Killdeer's nest on 5 June, 1915, containing one egg, placed at the edge of the trail. I also found one well-grown young, still in down, at the head of Buffalo Lake on 1 June. A few pairs frequented Alix Lake.

Tympanuchus americanus. PRAIRIE CHICKEN. Cook kindly gave me the skin of a female shot at Buffalo Lake on 26 December, 1914. It was the only specimen he had ever observed.

Pediocetes phasianellus campestris. PRAIRIE SHARP-TAILED GROUSE. Owing to the very wet months of early spring, Prairie "Chicken" and Ruffed Grouse were not as plentiful as last year. Close to the spot where Cook and I discovered a Killdeer's nest, I dismounted from the "democrat" to shoot a hare. Several shots failed to obtain the animal, and as I stepped off the bank bordering the road I trod on a Prairie Sharp-tailed Grouse. She had been sitting, all the while I was moving noisily around, on her nest of thirteen eggs, and kept close by until we drove away. This was on 5 June, 1915.

Circus hudsonius. MARSH-HAWK. One specimen seen near the town on 19 April, 1916. It is not particularly common in this locality.

Accipiter velox. SHARP-SHINNED HAWK. Almost within a stone's throw of my house I found a nest of the Sharp-shinned Hawk, built in the branches of a willow on the edge

of a small wood. It held three handsome eggs, which I took on 18 June, 1915. The structure was not bulky, and was placed about twelve feet above the ground. On 31 July, 1916, I shot an immature specimen on the same spot where I hunted for a nest in May but without success, close to the town (Red Deer). I saw others in the woods near my house on 5 August, all very noisy though not shy. I witnessed one stoop at a Kingfisher, which it hustled along for a short distance.

Astur atricapillus atricapillus. GOSHAWK. Mr. T. Pinnell, of Alix, presented me with an immature male shot on his farm on 27 February, 1915; and I saw two Goshawks close to Red Deer on 7 November, and a pair on 19 December near my house. This species seems fairly common. I received five of these birds between September and November 1916, one being an immature of the same season's hatching.

Buteo borealis calurus. RED-TAILED HAWK. Close to the village of Tees, I noticed on 23 March, 1915, several large Hawks. My notes for 17 April state "Hawks numerous"—evidently returning with spring, and probably of the above species. On 29 April I found a nest being built near Mirror; and the pair of birds which nested close to the house last year built again in the same wood, but the tree was too difficult to climb. I secured a fine (male), melanistic phase of this Hawk near Alix on 8 October, 1914; also another male of the light variety on 13 October, 1914. The first Hawk of this species appeared on 5 April, 1916, flying over the town, and eight more on the 15th circling high. I found a nest on the 19th in a balm-tree (*Balsamia balsamifera*), about 30 feet from the ground, holding a clutch of three well-marked eggs. I collected these on the 26th. During a brief visit to Dried Meat Lake, near Camrose, I found another nest on 19 May with two pale eggs in a slender poplar tree growing at the edge of some uncleared land, and it was built about 12 feet from the ground. A large sheet of 'The Edmonton Journal' had been fixed into the structure and was very conspicuous at a considerable

distance. I found this nest on 20 May. Red-tailed Hawks seem to be the commonest species almost everywhere.

Archibuteo lagopus sancti-johannis. ROUGH-LEGGED HAWK. A resident brought me an immature female Rough-legged Hawk, which was found sitting on a fence-pole near Red Deer; being injured, it was easily captured. The crop was empty. In the local taxidermist's shop I saw another specimen lately obtained in this district. I flushed a young bird in the woods close to the town on 6 September, 1916, and saw another, also immature, living in a saloon in the town, which had been picked up slightly injured.

Buteo swainsoni. SWAINSON'S HAWK. I secured a male Swainson's Hawk on 24 May, 1915, at Buffalo Lake, and another on 16 August, with my rifle, near the same locality. I have a female mounted specimen in the dark phase shot near Alix on 12 September, 1914.

Haliaeetus leucocephalus alascanus. BALD-HEADED EAGLE. One or two reports reached me of Bald-headed Eagles being seen during the spring near Alix, but I could not personally verify them. Whilst visiting Banff, in May, I saw in the Zoological Gardens a magnificent specimen, which I believe had been in captivity for a number of years. Probably before the well-wooded shores of Sylvan Lake became a summer resort for the inhabitants of Red Deer and other towns, the Bald Eagle and Osprey nested undisturbed. Nowadays the latter has long ceased to do so; but the former still remains, though I was disgusted to find on 16 June that the tree holding a huge nest had been wantonly felled. A pair of these grand birds were seen over the lake on 17 June, and I hope they may have nested in safety, as I have friends at the lake who would do much to protect them.

Aquila chrysaetos. GOLDEN EAGLE. I received in the flesh on 17 November, 1915, a splendid female specimen of the Golden Eagle, shot near Prairie Creek. Its crop and stomach contained a partly digested hare. The feet were of

a bright lemon-yellow, and the bird was in excellent condition. Two younger specimens were brought me alive on 30 November and 2 December respectively—one from Pine Lake district and the other closer to the town. The latter was caught in an unbaited trap set on top of a haystack. On 10 January, 1916, I received in the flesh a fine bird weighing 12 lb., shot near Red Deer. A second one was brought me on the 19th, which was secured also near the town, in an unbaited coyote trap placed on top of a haystack. Judging from reports received from different parts of the surrounding country, Eagles, particularly this species, appear to be plentiful, and the taxidermist here told me he had refused many. My specimens were not fully adult, and I found it impossible to ascertain the sex by dissection, which has greatly puzzled me. No doubt the severity of the winter had driven these birds down from the mountains, and it is a great pity so many should have been ruthlessly destroyed. Hares filled the crops of those I preserved. An immature specimen, shot some miles north of the town, was brought me by a neighbour who shot it from off a telegraph-pole. The bullet damaged its interior anatomy so much that I could not discover its sex with certainty.

Falco rusticolus rusticolus. GREY GYR-FALCON. I received from my friend, Mr. A. Tomlinson of Calgary, during October, a fine specimen of the Grey Gyr-Falcon obtained last year at Camrose in October. At a taxidermist's shop in the town I saw another and similar specimen collected about the same date.

Falco sparverius sparverius. SPARROW-HAWK. I expected to observe this migrant earlier than the date recorded in my notes—19 April—when one was seen near my house. On 6 May a pair had a nest in a hole in a balsam-tree (*Populus balsamifera*) whose top had fallen off, but the tree was unclimbable. On 2 June another pair occupied an old nesting-hole of the Flicker, within half a mile of the former. I received a single egg taken in the vicinity of the town on

9 June. A nest at Buffalo Lake held four young on 20 June (Cook).

Pandion haliaëtus carolinensis. OSPREY. A pair was reported to have been seen at Pine Lake, about twenty-five miles south-west of the town, 26 April, 1915, where they used to nest some years ago.

Asio wilsonianus. LONG-EARED OWL. Cook and I found a Long-eared Owl's nest with four newly hatched young, near Buffalo Lake, on 29 May, 1915. In the same wood in which I found the Sharp-shinned Hawk's nest, I also flushed a Long-eared Owl from her nest, which held four eggs, on 23 June. I was shown a nest of this Owl, about five miles out of town, which contained four eggs, on 28 May, 1916. It was situated in a thick clump of willows, having been originally built by a crow, and the female sat so close that I almost touched her.

Asio flammeus. SHORT-EARED OWL. Two Short-eared Owls were circling above my house on 16 April, 1915, at a considerable height. I noticed a fair number this season, and at Buffalo Lake picked up a well-fledged youngster on 31 May. In 1916, I noticed a single bird at Camrose on 16 May. It does not appear to be common in the Red Deer district.

Bubo virginianus subarcticus. ARCTIC HORNED OWL. My pair of pet Great Horned Owls were with me at Red Deer and thriving well on hares and raw meat. I took a young friend to a nest in a wood near my house at Alix, and on climbing the tree he reported that the nest contained three eggs and was lined with a few Owls' feathers and some dead leaves of the balm-tree. The birds flew around, uttering many piteous "hoo-hoos." I did not hear the "werk" note, as reported in my notes for last year. We examined this nest on 27 March, 1915.

Surnia ulula caparoch. HAWK-OWL. During 1915 I saw only one specimen, on 24 September, near Alix, hunting for its prey.

Ceryle alcyon. BELTED KINGFISHER. First observed at Alix on 6 August, 1915. It was generally flushed from below the dam of the village lake. I saw a female, which I believe was the same that nested in the bank of the creek close to my house, sitting on the telegraph-wires in the same locality as late as 9 November, 1916. On 30 June, 1916, I observed a Kingfisher enter its nesting-hole in a bank, almost opposite the tree which the Golden-eye selected for its nest, by the creek near my house. I feel sure the eggs had then hatched.

Dryobates villosus villosus. NORTHERN HAIRY WOODPECKER. Fairly numerous in this and the Sylvan Lake district. In the latter I found several nests between 12 and 24 June, all full of young birds.

Dryobates pubescens nelsoni. NELSON'S DOWNY WOODPECKER. This species was also nesting in the woods around Sylvan Lake, and was fairly abundant.

Sphyrapicus varius varius. YELLOW-BELLIED SAP-SUCKER. The last of my remaining quartette of Yellow-bellied Sap-Suckers died on 4 February, 1915, as my "Life" food supply became exhausted. During June, however, I got a pair of young, which I presented to the Banff Zoo in August. These birds make delightful pets and, but for occasional fits, do well in captivity. They are common wherever woods exist. I saw the first migrant of the year near my house on 30 April, 1916. I noticed a few pairs at Dried Meat Lake on 18-22 May.

Colaptes auratus luteus. NORTHERN FLICKER. The Northern Flicker is one of the commonest birds in this part of the country. Cook found a nest with seven eggs at Buffalo Lake on 4 June, 1915. Common everywhere. Mr. J. H. Fleming of Toronto writes me regarding two skins of females I sent him:—" *Colaptes auratus borealis* Ridgway (Boreal Flicker). This is not in the A. O. U Check-list, but if the form is good your bird is it. A male shot on 2 May, 1916, is also *borealis*."

Tyrannus tyrannus. KINGBIRD. Not common. First migrant of the year reported by Cook on 22 May, at Buffalo Lake.

Sayornis phœbe. PHŒBE. Earliest appearance at Red Deer 24 April. Common.

Empidonax minimus. LEAST FLY-CATCHER. Common everywhere. I discovered several nests at Sylvan Lake, the first with eggs on 15 June. Earliest record at Buffalo Lake was on 22 May, when a pair was seen by G. Cook.

Pica pica hudsonia. MAGPIE. Three or four were seen near Alix on 9 February, and a pair at Red Deer on 7 November. The Magpie is apparently extending its range.

Cyanocitta cristata cristata. BLUE JAY. Soon after my arrival in Red Deer I saw a Blue Jay close to the house, about 10 October, 1915. On 5 April, 1916, I saw a pair in the spruce-woods about a mile north of the town. A pair nested in my friend Mr. F. C. White's garden, quite close to his house. The young were successfully reared.

Corvus brachyrhynchus hesperis. WESTERN CROW. These pests were observed as early as 20 March, but I saw none myself till the 30th, when one appeared near my house. At Buffalo Lake they were seen on the 27th (Cook).

Molothrus ater ater. COWBIRD. Plentiful. First noted on 16 April, near Alix. I found the Thick-billed Red-winged Starling acting as host to this species on two occasions. By 19 April they were numerous everywhere in the district. In 1916 it was abundant in all districts. At Sylvan Lake I found its eggs in nests of the Clay-coloured Sparrow, Olive-backed Thrush, and Philadelphia Vireo.

Agelaius phœniceus fortis. THICK-BILLED RED-WINGED BLACKBIRD. I shot a male of the Thick-billed Red-winged Blackbird at Buffalo Lake on 5 January, 1915, in eclipse plumage. It was feeding on the grain from the pig-troughs,

and appeared to be a solitary specimen, but in spite of the cold and deep snow, was not at all starved. During the nesting-season it is a common sight to see them mobbing the thieving Crows.

Sturnella neglecta. WESTERN MEADOW-LARK. I was a little surprised to find a pair of these birds remaining here (Alix) so late as 2 October, 1915. The earliest note on their arrival that I have is 14 April, when I saw one near the village. In 1916, the latest date on which this species was observed here was 18 September, when one was seen within the town limits. I kept a fledgling alive for a month during the summer and found it a most engaging pet. I knew of three open fields undoubtedly containing nests, but I could not hit on the exact spots. Cook saw five birds at Buffalo Lake on 16 April.

Icterus galbula. BALTIMORE ORIOLE. More abundant than in preceding season. I found a nest close to Cook's house on 26 May, 1915, although building was still in progress. It was suspended in the characteristic way from the top of a thin bough and was very difficult to re-discover when the foliage grew thicker. On 4 June, whilst staying at the head of Buffalo Lake, I noticed another pair gathering nesting materials. I did not find this species so abundant around the town as at the Sylvan Lake, where it nests, although I failed to notice any. Cook reports hearing one sing near his house on 19 May, 1916.

Euphagus carolinus. RUSTY BLACKBIRD. Fairly plentiful everywhere. I observed two males at Red Deer on 19 April. On 26 September, 1916, there were about forty birds around my garden, one of which I shot with my .22 pistol. It proved to be a male in winter plumage. I also got a similar specimen on 5 October.

Quiscalus quiscula æneus. BRONZED GRACKLE. I received a skin of the Bronzed Grackle, shot by Cook near his house in August 1915. Two central tail-feathers were white and

somewhat abraded. I saw a small flock near my house on 9 April, 1916, and was much interested in the nuptial display of the males. These spread the breast and back feathers as well as the tail to the fullest extent, dropping the wings low and uttering their curious call-notes at the same time. Cook found a clutch of five eggs at Buffalo Lake on 6 June, and records the species as plentiful.

Hesperiphona vespertina vespertina. EVENING GROSBEEK. At Red Deer on 17 October, 1915, I saw a single Evening Grosbeak feeding on the seeds of maple-trees growing in one of the main streets, also a flock of four on 13 November in same spot. In another of the main streets of the town two males were feeding on Manitoba maple-seeds on 19 January, 1916. I noticed a flock of eight or ten near the river on 11 April, and I saw them for the last time on 6 May.

Pinicola enucleator leucura. ALASKAN PINE GROSBEEK. The Rev. H. M. Holdom informed me that he saw, on 10 & 31 January, 1915, several Pine Grosbeaks at Red Deer and Clive, feeding on maple-berries. Near my house in Alix I saw one specimen on 10 June, and a few close to my new abode on 25 December. I secured a fine male shot near the town on 11 April, 1916. They were not rare during January and February in this district. Mr. J. H. Fleming states that the skin examined by him was probably this species, but the beak was, unfortunately, rather damaged.

Carpodacus purpureus purpureus. PURPLE FINCH. On 6 May I saw three males close to my house and a pair near the mouth of the creek on 30 June.

Acanthis linaria linaria. REDPOLL. Quite plentiful at Red Deer during December 1915. I noticed Redpolls frequently at Alix about the same month in 1916, but overlooked including records in my notes. A small flock visited my garden on 7 September, 1916, and from then onwards they appeared to be fairly common.

Astragalinus tristis tristis. PALE GOLDFINCH. Plentiful in the vicinity of the town. I sent a skin to Mr. Fleming, who states it is probably this form.

Plectrophenax nivalis nivalis. SNOW-BUNTING. On 5 February, 1916, a flock, numbering about fifty, appeared in the woods near my house, one male of which I secured with my '22 pistol at long range.

Poecetes gramineus confinis. WESTERN VESPER-SPARROW. Fairly plentiful, but more so at Camrose. Singing lustily on 18 May, 1916.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW. Common.

Zonotrichia albicollis. WHITE-THROATED SPARROW. Plentiful everywhere.

Spizella monticola ochracea. WESTERN TREE-SPARROW. I noticed a small flock around my house on 24 April, 1916, and shot a male on the 28th.

Spizella pallida. CLAY-COLOURED SPARROW. At Sylvan Lake I found two nests containing eggs; to one of these a Cowbird had contributed. Both were well hidden in the long grass near the roadside.

Junco hyemalis hyemalis. SLATE-COLOURED JUNCO. Not rare. I shot a pair not far from the town on 26 April, 1916. One bird was seen at Buffalo Lake on 16 April (Cook).

Melospiza melodia melodia. SONG-SPARROW. Abundant everywhere. I found a nest in my back garden holding five well-fledged young, on 12 July, 1916.

Zamelodia ludoviciana. ROSE-BREASTED GROSBEAK. I noticed one male in the woods north of the town, on 24 May, 1916, after which date these birds became common, particularly at Sylvan Lake. At this place I found a nest with four eggs, on 14 June, on which the male was incubating, surrounded with flowers of the clematis, and allowed me to approach very close. I found several more

nests later. One on the 18th contained four young, covered with white downy fluff. At Buffalo Lake, Cook observed a pair on 6 June, and states that a few breed in the locality.

Lanius borealis. NORTHERN SHRIKE. More abundant than in the previous season, particularly so near Mirror. Like the Sparrow-Hawks (*F. s. sparverius*), they like the telegraph-poles and wires from which to survey the surrounding country.

Vireosylvia philadelphia. PHILADELPHIA VIREO. I found a nest at Sylvan Lake on 18 June, 1916, containing four eggs, which I believe to belong to this species. It was suspended from the slender branch of a small bush not more than four feet above the ground. Three eggs of the Cowbird crowded the structure to its fullest capacity.

Dendroica aestiva aestiva. YELLOW WARBLER. One of the commonest members of this family. I found three nests on 13 June, 1916, at Sylvan Lake, one with five eggs and the others unfinished. Later on I found more nests, the birds being particularly fussy when I approached near them. They were usually built at about four to five feet above the ground, though a few were even twelve to fifteen, but the site was then against the trunk of a fair-sized poplar-tree. Some of these nests held small young about the 15th of the same month.

Dendroica coronata. MYRTLE WARBLER. A few pairs frequented the woods around my dwelling in early May. On 29 April, 1916, several were seen by Mrs. Cassels near the town, and Cook (Buffalo Lake) noticed one on 15 May.

Piranga ludoviciana. WESTERN Tanager. Fairly rare. I saw several in the woods around my house on 29 May, 1916, and at Sylvan Lake found a nest on 14 June. This was placed amongst the slenderest branches of a young and thin poplar-tree, about forty feet from the ground, and quite impossible to investigate. Another nest close by was either an old one or else deserted, but was only about twenty feet above the lake-side. At the best of times, the structure is

a very fragile one. Mrs. Cassels, a very keen observer of birds, informs me that her earliest date for Red Deer was 18 May, and for Sylvan Lake 6 June, when she noticed one building.

Progne subis subis. PURPLE MARTIN. Between Mirror and Buffalo Lake, I saw a pair of these birds on 30 May, 1915. They do not appear to be common. In 1916, I saw one near the town on 1 May. A few pairs built in the rotten stumps left standing after a bush-fire, along the banks of the lake and a little inland at Sylvan Lake. At this place I examined a nesting-site and took out a single egg on 23 June. One or two small fresh leaves were utilized as a lining.

Petrochelidon lunifrons lunifrons. CLIFF-SWALLOW. 23 July, 1916, was the last date on which I saw this species. Two birds were flying around the neighbourhood of my house. Not plentiful.

Iridoprogne bicolor. TREE-SWALLOW. Fairly numerous. I found them nesting under the same conditions as the Purple Martins, and both species, where possible, were using the same stump. At Dried Meat Lake they were beginning to build on 20 May, 1916. About a dozen were first observed, near my house, on 9 May, and by Cook at Buffalo Lake on the 8th.

Riparia riparia. BANK SWALLOW. A small colony nested in the river-bank near my house. At Buffalo Lake they arrived on 22 May, 1916 (Cook).

Bombycilla garrula. BOHEMIAN WAXWING. During the summer this species was common throughout the Alix district. My first notes record five, seen near my house on 22 June, 1915. I observed a flock of about twenty birds in the woods north of the town on 5 April, 1916. They were busily hawking flies and were rather shy; their manner of hunting insects reminded me greatly of the European Bee-eater (*Merops apiaster*) I saw in such large numbers in

Cyprus. I shot a fine male on the 19th, and Cook states that he saw seven birds on 16 February at Buffalo Lake.

Bombycilla cedrorum. CEDAR WAXWING. A pair first observed on 6 June, 1916, near my house. On the 19th I noticed one carrying nesting materials. On 8 August I saw eight flying south-east over the town. Not very abundant.

Anthus sp? PIPIT. On the banks of the river I observed a flock of about eight or ten Pipits, not tame enough to approach very closely, on 4 October, 1916.

Dumetella carolinensis. CATBIRD. Although I strongly suspected the presence of this bird at Alix in 1914, I could not be certain of its identity, but at Red Deer I saw three, at close view, on 28 July, 1915.

Troglodytes aëdon parkmani. WESTERN HOUSE-WREN. Fairly abundant. I found a nest at Sylvan Lake on 15 June, 1916, containing seven eggs; the bird had used an old nesting-site of the Downy Woodpecker. At Red Deer a pair successfully reared their brood in a ginger-jar slung in a small tree, close to Mr. C. F. White's porch. Cook heard one singing on 26 May.

Sitta canadensis. RED-BREASTED NUTHATCH. This species during May 1916 was fairly numerous in the woods surrounding the town. I saw the first specimen on 26 April, but not many at Sylvan Lake. Mrs. Cassels reported a pair in her garden at Red Deer on 18 April, worrying some Chickadees.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH. A few birds were seen during early May in 1915 in the woods around the town, all very shy. At Sylvan Lake on the 14th, I discovered a nest in the woods containing four eggs, with two Cowbird's. On the following day another with three eggs and one Cowbird's, and two empty nests. I had the same luck on the 17th, and on the 19th found a nest with three newly hatched young along with a fresh egg

of the other species under them. On 26 June I found the last one of the season, as far as my searching went, which held three eggs and one young. This was about a quarter of a mile from my house in the woods. All these nests were built within six feet of the ground, with one exception, situated about ten feet up in the branches of a small poplar.

Planesticus migratorius propinquus. WESTERN ROBIN. Near Alix, on 23 April, 1915, I noticed a Robin with a pure white head, also several primaries of the same colour. Nesting began about 19 May, on which date, in this locality, I found eggs but no full clutches. I have managed to rear a young bird, now successfully moulted, which, as my wife remarks, "always starts to sing in unison with the kettle." One specimen reported near the town on 2 April, 1916, and I saw one on the 7th. Plentiful everywhere. At Dried Meat Lake I observed a nest with four eggs, neatly concealed in the hollow at the top of a dead tree-stump, on 21 May.

Sialia currucoides. MOUNTAIN BLUEBIRD. Decidedly more abundant than in 1914. A pair appeared in the town on 22 March, and later became common. I did not observe any at Sylvan Lake. In 1916, small flocks of adults and young were daily to be seen in the town up to 20 September, on which date my notes record two.

XXV.—Obituary.

GIACINTO MARTORELLI.

As was briefly mentioned in 'The Ibis' for April, Prof. Martorelli, of the Civic Museum at Milan, and a Foreign Member of the B. O. U. since 1903, died at Milan on 11 December, 1917.

Born at Turin on 1 October, 1855, Martorelli was educated at the University of his birthplace, obtaining a doctoriate in Natural Science in 1879 for a dissertation

on comparative anatomy. He was shortly afterwards appointed an Assistant in the Zoological Museum at Turin, where he remained two years; he subsequently held various teaching posts under the Minister of Public Instruction at Sassari, Pistoja, Rome, and Milan.

The collection of birds, consisting of over 20,000 mounted specimens amassed by Count Ercole Turati, who died in 1881 (*vide Ibis*, 1881, p. 608), subsequently became the property of the Civic Museum at Milan, and in 1893 Martorelli was appointed Director of the Turati collection in the Museum, a post which he held until his death.

Most of Martorelli's publications in ornithology deal with the specimens in the Turati collection and Italian birds, and he was one of the collaborators with the late Prof. Giglioli in the Italian Ornithological Inquiry which commenced in 1885, and resulted in the publication of a series of volumes ('Avifauna Italica') well known to students of Palearctic ornithology. One of his most important works was his 'Monografia illustrata degli Uccelli di Rapino in Italia,' published in 1895, in which he monographed the Italian Birds of Prey; this was perhaps his favourite group, and he contributed many observations on the complicated and difficult plumage-changes and plumage-phases of these birds.

Other important papers are on the pattern of the plumage of birds—'Le Forme e le Simmetria delle Macchie nel Piumaggio'; on Dichroism in Herons—'Nota ornitologica sopra l'*Ardeola ides* (Hartlaub) e cenno sul dicroismo di varii Ardeidi'; while in 1906 he published a fine illustrated work on the Birds of Italy, 'Gli uccelli d'Italia,' with full descriptions of 463 species, illustrated with many reproductions of photographs and six coloured plates (*vide Ibis*, 1907, p. 209).

To our own pages he contributed in 1897 a short paper on the plumage-changes of a Lory (*Eos fuscata*) as exhibited by specimens in the Turati collection.

Martorelli was much interested in hybrids and variations as well as in bird-protection and the problems of migration,

and wrote many papers on these matters. Most of his publications are to be found in the *Atti* of the Italian Society of Natural Sciences, which is also the organ of the Civic Museum, in 'Avicula,' and its successor the 'Rivista Italiana di Ornithologia.'

A good artist, Martorelli designed and painted most of the illustrations with which his various works were illustrated.

For most of the facts recorded in this notice we are indebted to Count E. Arrigoni Degli Oddi, his compatriot and esteemed friend, who writes in the highest terms of his character and achievements. His death is a great loss to Italian ornithology.

JOHN RANDALL HATFEILD.

We regret that we have omitted to mention the death of Mr. J. R. Hatfeild, which took place on 12 August, 1917, at a nursing home in London. He was elected a member of the Union in 1902.

Born in 1874, he came of a Yorkshire family, his father being John Hatfeild of Mellow Grange, near Doncaster. He was educated at Trinity Hall, Cambridge, and succeeded to a house and estate at Thorpe Arch in Yorkshire, but he lived the greater part of his life at Edlington Hall near Horncastle in Lincolnshire. He was passionately devoted to shooting and fishing, and this led him to take a keen interest in Natural History and especially in birds. He had no great scientific knowledge, but collected with zeal and liked to try his hand at taxidermy.

He married Miss Nest Hyde, who was killed about three years ago as the result of an accident while trying a new hunter over jumps. He leaves behind him one daughter.

We regret that the news of the death of Col. W. Vincent Legge, Col.M.B.O.U., of Tasmania, has lately reached us. We hope to print a notice of his life and work in the next number of 'The Ibis.'

XXVI.—*Notices of recent Ornithological Publications.**Balfour on Bird-Cult in Easter Island.*

[Some Ethnological Suggestions in regard to Easter Island, or Rapanui. By Henry Balfour. *Folk-Lore*, 1917, pp. 356-381.]

The main object of Mr. Balfour's paper is to throw some light on the relationship of the inhabitants of Easter Island in the south-eastern Pacific to other peoples, and he believes that some of their curious cults and implements show them to be connected with some of the Melanesian races of the extreme west of the Pacific. Incidentally he alludes to the interesting fact that the Sooty Tern (*Sterna fuliginosa*) is the object of an important "cult."

One of the regular breeding-places of this bird is the small rocky island of Moto Nui, lying off the south-west end of Easter Island itself. Mrs. Routledge, whose observations during a recent stay in Easter Island form the basis of Mr. Balfour's remarks, has described the great annual ceremony which is observed by the Easter Islanders, in which the main feature is a competition to secure the first egg of the season after the arrival of the Terns at their nesting-site. The lucky winner of the race becomes the "Bird-man" of the year and enjoys certain privileges, combined with some discomfort due to his being placed under a rigid tabu. The sacred egg is preserved in his house until the next season.

A somewhat similar cult is known in the Solomon Islands, where, however, the object is not the Sooty Tern but the Frigate-bird; and Mr. Balfour believes that the Easter Islanders' cult is derived from that of the Solomons, but that the bird was changed owing to the fact that the Frigate-bird does not breed in Easter Island.

The whole subject is one of considerable interest to the ornithologist as well as to the ethnologist, and for this reason we have drawn attention to the matter.

Cory on American Birds.

[Catalogue of Birds of the Americas. Part II. No. 1. By Charles B. Cory. Publ. Field Museum Nat. Hist., Zool. Ser., Chicago, xiii. 1918, pp. 1-315; -1 pl.]

It is the intention of Mr. Cory to catalogue all the birds of the New World from Alaska to Cape Horn, and the present volume, though not the first in classification, is the first in time to appear. It deals with the Owls, Parrots, Nighthawks, Swifts, and Humming-birds and their immediate allies, and forms a stout volume of over 300 pages.

The classification follows generally the lines laid down in Sharpe's Hand-list, and the nomenclature and arrangement is based largely on Ridgway's 'Birds of Middle and North America,' and on Brabourne and Chubb's 'List of the Birds of South America,' though differing from the latter work in the adoption of a trinomial grouping of the species.

Where any species is not described in Ridgway's great work or in the Catalogue of the Birds in the British Museum, a short definition of the species or subspecies is given in a footnote, thus enabling a worker to identify any American bird hitherto described with the aid of the three works. Full references are given to the original descriptions of both genera and species as well as to such works as contain coloured plates or monographs of groups or important papers on geographical distribution and taxonomy. There can be no doubt that Mr. Cory's Catalogue will be of the greatest value to all writers on American ornithology, and we are greatly indebted to him for having undertaken so laborious and useful a task.

We find the following new forms characterized for the first time, and would suggest that in future parts or volumes a list of these should be prefaced to the beginning of the work as it is difficult to disinter them:—*Speotyto cunicularia minor*, *Aratinga cactorum perpallida*, *Eupsittula pertinax margaritensis*, *Amazona amazonica tobagensis*, *Urospatha martii olivacea*, *Nephæetes niger guadeloupensis*, *Lepidopyga goudoti zuliae*, *Colubri iolatus brevipennis*.

The misprints appear to be rather more numerous than

they should be, and detract somewhat from the confidence that we should have in the accuracy of a work of this kind, though we confess that we have not found any that would seriously mislead the worker.

On p. 25 *Espiritu Santo* is printed *Espiruto*, p. 29 *Otus asio bendirei* is printed *bendieri*, p. 49 Bull. B. O. C. iii. should be Bull. B. O. C. i., p. 101 Humboldt is printed Humbold, and p. 103 Grinnell is printed Grinnel.

There are no doubt many others, but we have not made any special search for them, and we hope Mr. Cory will understand that we only draw attention to these so that more care in proof-reading be exercised in future parts or volumes.

Despott's Maltese Bird Notes.

[Ornithological Notes for the Maltese Islands (January-June 1917). By G. Despott, M.B.O.U. Arch. Melitense, iii. 1918, pp. 88-90.]

These notes are in diary form and chronicle the arrival and departure of the numerous migrants which pass the Maltese Islands on their way to and fro from their winter-quarters. No birds new to the islands were observed, but a number of Glossy Ibis appeared in the market on 26 April and a considerable flock of Grey Plovers passed over the island from the south-east on 9 May, and between the 22nd and 29th of June several flights of Cream-coloured Coursers arrived. On the other hand, the Rock-Thrush, Garden Warbler, and Whitethroat—usually abundant birds in spring—hardly appeared at all.

Gurney's Recent Papers.

[The Irruption of Waxwings into Norfolk during the winter of 1913-14. By J. H. Gurney, F.Z.S., M.B.O.U. Trans. Norf. Norw. Nat. Soc. lx. 1915, pp. 773-774.]

[*Leucopternis occidentalis*. Id. *ibid.* p. 830.]

[Articles on Ornithology and Ornithological Reports from the County of Norfolk. By J. H. G. Pp. 1-8, 1918.]

A great immigration of Waxwings into the eastern counties of England took place in the winter of 1913-14,

and Mr. Gurney enumerates their progress and numbers in Norfolk in the short article the title of which is quoted above.

The second note deals with a rare Hawk described in 1876 by Salvin from Puna I., off the coast of Ecuador. Two examples of this rare species have recently been added to the Norwich Museum.

The third title is that of a pamphlet containing a list of Mr. Gurney's various papers on ornithological subjects, dating from 1866, when he contributed to 'The Ibis' a short note on "a variety of the Swallow," which he believed to be *Hirundo savignii*, but which was afterwards found to be a mistake (see B.O.U. List Brit. Birds, new ed. p. 330).

Loomis on the Petrels etc.

[A Review of the Albatrosses, Petrels, and Diving Petrels. By Leverett Mills Loomis. Proceedings of the California Academy of Sciences, Fourth series, vol. ii. pt. ii. No. 12, pp. 1-187, pls. 1-17, April 22, 1918.]

This review is apparently based on the collection of Petrels made on account of the Academy at the Galapagos Islands in 1905-1906 by an expedition under the well-known collector, Mr. Rolls Howard Beck. The review consists of six parts, the first being a short historic sketch dividing the study of Petrels into four periods—the pre-Couesian, Couesian, Salvinian, and Godmanian. While fully agreeing that the pre-eminent student was Coues, the last period may not later be termed the Godmanian, as Godman's 'Monograph' was simply, as admitted by himself, the completion of Salvin's work. It is unfortunate that the present review scarcely passes the standard of the pre-Couesian period, as by usage of a rough lumping nature our knowledge of Petrels appears to belong to that period. The second part treats of geographic distribution in a superficial manner while the third consists of remarks on migration, which may be considered in relation to other data not approved of by the author. So little is known of the breeding-places and habits of Petrels that the exodus-migrations so surely spoken about are purely

hypothetical and problematically of little value. The writer, however, accepts that some species of Petrels are more or less sedentary, and the problems of Petrel migration must be considered in conjunction with geographical races. Loomis, however, concludes "Bird species are realities," and "In the present paper geographic variation is considered in connection with the other variations of species, the subspecies theory being discarded as a theory that has outlived its usefulness." As a matter of fact, geographic variation is not dealt with at all, probably the real reason being lack of specimens—a very potent factor. The Academy Collection is said to number over two thousand, and at the time of writing constituted the largest collection of these birds in the United States. As, however, about nineteen hundred skins are recorded for sixteen species from the Galapagos and adjoining seas, the poverty of such a collection may be more correctly estimated by the admission that about a hundred species have been described and there were about a hundred or so skins to consider their validity by. Consequently the fourth part, dealing with Variation, is more or less the result of study of this feature in this one locality. The results must be contrasted with those secured elsewhere, before any conclusions can be fairly provided. A majority of moulting birds appear to have been studied, and conclusions based on these without consideration as to their breeding-place. Further, these were often killed in the breeding-season, though many thousands of miles distant from any known breeding-place of their species; and this points to their aberrant nature, probably being non-breeding birds of the year or physically unfit. Dichromatism is given a big place throughout, any unrecognized variation being put down to this cause.

The fifth part, dealing with Classification and Nomenclature, certainly shows novel features, which in other cases might be attributed to atavism: thus, "I heartily agree with Dr. Reichenow that the genealogy of birds is a subject to be considered apart from their classification." The novelty cannot be recommended when such results as the lumping of *Diomedea exulans* with *chionoptera* and *regia* are the

outcome. The two species of *Phaebetria* are ignored as being probably dichromatic phases, while all the Prions are lumped as one species, the confession "the series before me is a meagre one" referring to sixteen specimens, though a qualifying sentence reads "Ample series from breeding-stations alone will determine the precise nature of the variations." The results of such study have been wilfully ignored, and consequently the value of Loomis's lumping is depreciated.

The sixth part deals with the material collected on the Pacific Ocean adjacent to North America and the Galapagos Islands and contains a little of general interest, though generally the close attention to moult and neglect of subspecies lowers the value of the conclusions propounded. Thus *Puffinus obscurus* is utilized to cover several "book species" which had not been seen or examined, the results being entirely based upon over a hundred specimens from the Galapagos alone. In this group such conclusions are as useless as are the majority of those presented in this paper. It is unfortunate that the methods employed are so confusing; otherwise the record of *Procellaria parkinsoni* in Galapagos waters would have been clearly put forward, and we should have understood that apparently a form of this species breeds on the group or along the American coast.

Study of the paper as a whole confirms the opinion that we know little of the breeding-habits of Petrels, and that there is still a great deal to be done in this connection at the Galapagos Islands. A peculiar confirmation of the ideas proposed, that these "migrant" Petrels are not such, is seen in connection with *Oceanodroma furcata* where breeding colonies of the supposed "north-bound migrants" have been found off the California coast. The recognition of species, without subspecific differentiation, cannot be successfully applied to this group in the present state of our knowledge, as shown by the recognition of *Puffinus auricularis* and *P. opisthomelas* as distinct species, while lumping *Pterodroma sandwichensis* under *P. phaeopygia*, the differences in the latter case being much greater and more constant than in the former. According to the author's own stated views

the two former cannot possibly be "realities," though they possibly are. In conclusion, the views propounded, while worthy of consideration, must meet with little acceptance until confirmed by examination of material—an item lacking in the review noticed.

T. I.

Macoun on the Birds of Canada.

[Catalogue des Oiseaux du Canada. Par John Macoun et James M. Macoun. Pp. xii+909. Ottawa (Imp. du Gouv.), 1915. 8vo.]

This well-known work was first published in 1909, and was noticed in our pages (*Ibis*, 1910, p. 556). The present edition is a French translation of the original one, without any further additions. It seems a great pity that the opportunity of correcting and adding to the former edition should not have been made use of, as a good deal of work on Canadian ornithology has been done since 1909; still we hope the present volume will be found useful to the French-speaking inhabitants of Canada, and that a new edition of this valuable work will be undertaken before many years have elapsed.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. vii. pt. 1, pp. 1-112, pls. 225-234. London (Witherby), March 1918.]

In this part the author introduces us to what are commonly known as Picarian Birds, beginning with his Orders, PODARGIFORMES, CAPRIMULGIFORMES, CORACIFORMES, and ALCEDINIFORMES, which will be followed, as in Dr. Sharpe's Classification, by MICROPODIFORMES, CUCULIFORMES, and MENURIFORMES. It will be noticed that Sharpe only allowed the groups subordinal rank, while we shall not be surprised if Mr. Mathews eventually parts the abnormal *Menura* from this alliance.

The names of the Families follow those of the Orders, except that a second family, Ægothelidæ, is recognized under the Podargine assemblage, and another, Dacelonidæ, under the Kingfishers. In regard to genera, *Podargus* auctt. is split into three, viz. *Megapodargus* (for *papuensis*), *Podargus* (for

strigoides), and *Micropodargus* (for *ocellatus* and *plumiferus*). The extralimital *Batrachostomus* ought probably, we are told, to be similarly treated; while *Ægotheles* is divided into that genus proper and *Euægotheles* now newly propounded.

Podargus strigoides requires several pages of synonymy, which is very carefully worked out. To give two instances: *P. strigoides*, *megacephalus*, and *gracilis* depend upon three drawings of the same specimen; *P. humeralis*, *stanleyanus*, and *cuvieri* represent one species from the Linnean Society's collection. The species of former authors are often merely recognizable as subspecies; and these, with Mr. Mathews's own (including two new phases, *centralia* from Central Australia and *capensis* from Cape York), number no fewer than thirteen, among which *rossi* at least differs in its comparatively small eggs.

The controversy as to the sounds made by this well-known bird is not yet finally decided—that is, whether it cries “boobook,” like the Owl of that name. Good authorities differ; but we should like to suggest that this is probably a question of “personal equation,” and that, where two birds utter hooting notes, these may sound like “boobook” to one man and not to another. Surely the varying opinions point to the whole question being a matter of degree only, and that the cries if heard simultaneously would be unmistakable.

Under *Micropodargus* the “species” *ocellatus* and *marmoratus* are stated to be identical, while *plumiferus* loses its subspecies *neglectus*. Under *Ægotheles cristata*, again, we have seven subspecies, with four that are new, and *rufa* discarded. As a specific name *cristata* just antedates *novæ-hollandiæ*, of which *leucogaster* and *vittatus* are synonyms.

Of the Coraciiformes we only have in Australia the “Dollar-bird,” *Eurystomus orientalis*, synonymous with *pacificus*, and even the subspecies *bravi* is cancelled.

A thorough discussion is given of the divisions of the Alcedinidæ with reference to the views of former writers, and especially Miller in the United States. As, however,

Alcedininæ and Daceloninæ alone occur in Australia, the status of other possible subfamilies hardly affects the present part; Mr. Mathews accepts both, while demurring to the present method of defining the latter subfamily.

The genus *Alcyone* is used for the species *azurea*, and five subspecies are allowed (of which *diemenensis* used to stand as a species) besides some seven that are extralimital, two being new. They lead to a good deal of consideration, as do those of the next species, *Micralcyone pusilla*, where three are allotted to Australia, *yorki* being new. Several former names are shown to be synonyms.

Several new genera are next propounded for non-Australian forms, viz. *Cyanonyx* for *lepida* and its nearest allies, *Ceycalcyon* for *cyanopectus*, *Argyronyx* for *argentata*, *Ispidella* for *leucogaster*, and *Ceycoides* for *madagascariensis*. *Therosa* is, moreover, accepted for *sotitaria* and *meeki*, while their relationships are fully discussed.

The part ends with *Syma*, where *flavirostris* is taken as a subspecies of *torotoro*; but further details are to be given in the following part of this work.

Murphy on Oceanites.

[A study of the Antarctic *Oceanites*. By Robert Cushman Murphy. Bull. Amer. Mus. N. H. New York, xxxviii. 1918, pp. 117-146.]

The main object of this paper appears to be to controvert Mr. Mathews's suggestion that there are two forms of Wilson's Petrel—one in the south Atlantic and one in the north. This is, of course, a new suggestion, as it has been generally acknowledged that Wilson's Petrel breeds in the southern hemisphere and makes a trans-equatorial migration during the (northern) summer months to the north Atlantic. Mr. Mathews, however, relying mainly on his belief in the comparative non-migratory habits of Petrels and other "Tubinares," is confident that the Wilson Petrels of the north Atlantic breed in some hitherto overlooked colonies in the West Indian or North African Islands. This appears to us to be carrying *à priori* reasoning rather

too far, and we would consider that it is up to Mr. Mathews to find the breeding-place first before writing about it.

Anyhow, Mr. Murphy disagrees with Mr. Mathews, and supports the old orthodox views of the trans-equatorial migration, and marshalls his facts and observations to prove his theme, though he does not seem to be able to substantiate the occurrence of the Petrel in the equatorial belt. Incidentally he describes the plumages and moults of *Oceanites*, including a juvenile plumage hitherto unnoticed, characterized by white edgings to the feathers of the belly and by a whitish spot on the lores. Further, he has something to say on the migration, breeding, and food-habits, as observed by him on his voyage to South Georgia and back in 1912-13. The paper is illustrated by some photographs of birds taken from ship-board or from skiffs.

Swarth on Californian Jays.

[The Pacific coast Jays of the genus *Aphelocoma*. By H. S. Swarth. Univ. Cal. Publ., Zool. xvii. 1918, pp. 405-422.]

In this review of the Jays of the genus *Aphelocoma* Mr. Swarth deals with a problem that frequently shows itself when careful comparisons are made of a wide-ranging species which can be divided into several geographical races. In this case a race inhabiting the southern half of the peninsula of Lower California, though so distinct from another (*Aphelocoma c. californica*) inhabiting the northern portion of the peninsula as to induce Mr. Swarth to regard it as a distinct species (*Aphelocoma hypoleuca*), yet is practically indistinguishable from another subspecies (*A. c. immanis*), found much farther north in the Sacramento Valley, north of the San Francisco region. The only satisfactory explanation appears to be that this is a case of parallel modification along the same lines, and that it does not really indicate racial relationship. There are many other instances of the same phenomenon, and all workers on subspecific forms are familiar with such. Mr. Swarth discusses the relationship of the various races at some

length, and subsequently reviews the various forms recognized by him, illustrating their distribution with a sketch-map. He proposes to recognize one new subspecies, *A. californica oocleptica*, from the coast region of California north of San Francisco Bay.

Swarth on the Birds of Arizona.

[Notes on some birds from central Arizona. By H. S. Swarth. Condor, xx. 1918, pp. 20-24.]

During the summer of 1917 Mr. Swarth spent some weeks in central Arizona, where it is traversed by a scenic highway known as the "Apache Trail," between Globe and Phoenix. It is an interesting region, as it appears to be the meeting-place of several Mexican species here reaching their northern limit and certain Rocky Mountain forms which do not go farther south. A list of the more interesting forms met with is given.

Theobald and others on the food of the Rook, etc.

[Reports on the food of the Rook, Starling, and Chaffinch. By F. V. Theobald, W. McGowan, and H. S. Leigh. Suppl. to the Journ. of the Board of Agriculture, May 1915, pp. 1-56.]

The study of economic ornithology of vast importance to agriculture has been hitherto woefully neglected in the British Islands, especially when we realize what a great deal has been done in this matter on the other side of the Atlantic, and we are glad to see that the Board of Agriculture has at last taken the matter up and issued what can only be regarded as a preliminary report.

Messrs. Theobald and McGowan's report, which is separately presented from that of Mr. Leigh, deals with the stomach-contents of 277 Rooks, 748 Starlings, and 527 Chaffinches, not a very large number, perhaps, on which to base final conclusions, especially as no nestlings appear to have been examined.

On the whole, the balance appears to incline against the Rook as destroying great quantities of grain, while it does

very little in the matter of devouring injurious insects. The Starling seems to have a better record, as it kills and eats a number of injurious insects and molluscs. In regard to the economic status of the Chaffinch, the authors seem to be rather dubious, but they are inclined to look upon it as neutral. It is mainly insectivorous in the summer months, and feeds on grain and weed-seeds in the autumn and winter.

Altogether, the reports do not seem to help one to any very definite conclusions; probably a great many more observations must be recorded before anything satisfactory can be deduced.

Thorburn's 'British Birds.'

[British Birds: written and illustrated by A. Thorburn, F.Z.S. Supplementary Part, with two plates in colour. London (Longmans), 1918. 4to.]

We understand that the demand for Mr. Thorburn's beautiful work on British Birds has been so great that the publishers have been compelled to issue a new edition before the completion of the first, and the present supplementary part which is included in the new edition is issued separately to those who are the fortunate possessors of the first.

In it are illustrations of some of the birds recently recorded as having been taken in Great Britain for the first time, such as *Sylvia rüppelli* and *Luscinola melanopogon*, as well as of some which have recently been shown to be distinct from previously known forms, such as *Turdus hebridensis*, *Parus hibernicus*, and *Parus kleinschmidti*.

The two plates are worthy successors to those already issued and should be obtained by all those who are the happy possessors of the previous volumes.

Wetmore's recent papers.

[A new Honey-eater from the Marianne Islands. By Alexander Wetmore. Proc. Biol. Soc. Washington, vol. 30, 1917, pp. 117, 118.]

[The relationships of the fossil bird *Palæochenoides mioceanus*. Id. Journ. Geol. Chicago, xxv. 1917, pp. 555-557.]

[An abnormal egg of *Fulica americana*. Id. Condor, xix. 1917, pp. 65-66.]

[A note on the tracheal air-sac in the Ruddy Duck. Id. ibid. xx. 1918, pp. 19, 20.]

[On the fauna of Great Salt Lake. Id. Amer. Nat. li. 1917, pp. 753-755.]

In the first of these short notes the Red Honey-eater of the Marianne Islands is separated from that of the Caroline Islands under the name *Myzomela rubratra saffordi*, subsp. n.

In the second note Mr. Wetmore points out that in his opinion the fossil bird *Paleochenoides*, founded on the distal end of a femur from Miocene Beds in South Carolina, is not anserine in relationship, as believed by the describer, Dr. Shufeldt, but steganopodine; and probably close to *Pelecanus*.

The third note contains an account of a somewhat abnormal Coot's egg, which was laid after the bird had been captured alive, and the abnormal shape and colouring is attributed to excitement and fear, and their reaction on the oviduct through the nervous system.

The tracheal air-sac of the Ruddy Duck is a subject about which Mr. Wetmore has previously written; some additional information is here given, proving that the air-sac in question is confined to the male sex and that it is not deflated when the bird is diving, and that considerable pressure is necessary to do so. The control of the outward flow of air is effected by the sterno-trachealis muscle, and there is no sphincter.

The last note controverts a recent statement by Dr. C. T. Vorheis that the Brine Shrimp (*Artemia*) and the Alkali Fly (*Ephydra*), so abundant in certain parts of the Great Salt Lake of Utah, are without enemies. Mr. Wetmore finds that these two organisms form the greater part of the food of several species of Ducks, such as the Shoveler (*Spatula clypeata*), the Golden-eye (*Clangula c. americana*), and the Green-winged Teal (*Nettion carolinense*).

S. A. White on the Birds of Central Australia.

[Results of the South Australian Museum Expedition to Strzelecki and Cooper Creeks, September and October, 1916—*l* (Aves). By S. A. White. Trans. R. Soc. S. Austr. xli. 1917, pp. 441-466, pl. xxxi.]

[In the Far North-east: A scientific expedition. By Capt. S. A. White, M.B.O.U., R.A.O.U.; pp. 1-144, many photos. Adelaide. 8vo.]

Capt. White's last journey into the interior of Australia was in August 1916. Accompanied by Mr. Waite, of the Adelaide Museum, he travelled by train to Farina, about 350 miles north of Adelaide, whence he trekked with horses, camels, and Afghans north-eastwards past Mount Lyndhurst, Mount Hopeless, and Lake Cullibone to Innamincka, near the New South Wales border on Cooper Creek, where Burke the explorer perished in 1861. He returned to the railway by a more northern line along the Cooper Creek. As the Cooper is more often in flood than any other creek in the central region, Capt. White hoped to find bird-life abundant, but in this he was a good deal disappointed, and birds were very scarce.

A new Tree-creeper (*Climacteris waitei*) was, however, obtained on the Cooper, and the nest and eggs of *Ashbyia lovensis* were taken for the first time. In all, about 106 species of birds were collected, and the range of many of these was considerably extended.

The first title quoted is that of the scientific results of the expedition, and contains a list of the species procured; the second title is that of a small volume containing a popular account of the journey and of the incidents that occurred.

Bird-Lore.

[Bird-Lore. An illustrated bi-monthly magazine, devoted to the study and protection of birds. Edited by Frank M. Chapman. Vol. xix. Nos. 1-6 for 1917.]

By far the best of all the popular bird magazines, 'Bird-Lore' continues to flourish under the able guidance of Mr. F. M. Chapman, who, we learn from a paragraph on p. 215 of the present volume, has given up his work at the New

York Museum temporarily to undertake at Washington the duties of Director of the Bureau of Publications of the American Red Cross. He has found time, however, to write a notice on the plumages of the American Wrens and of the American Swallows to accompany coloured plates by Mr. Fuertes illustrating these birds, while in the case of the latter group we have an additional article by Mr. Oberholser on their migrations.

There are a large number of more popular articles, generally illustrated with good photographs, dealing with American birds under every aspect.

'Bird-Lore' is also the official organ of the powerful National Association of Audubon Societies, which is a central organization having branches or affiliated societies in practically every State in the Union, the object of which is the protection of birds by education, by legislation and by other means. A good proportion of the matter in 'Bird-Lore' is devoted to this propaganda, which has certainly had a wonderful effect in rousing the people of the United States to the importance of bird protection, not only for sentimental, but for economic reasons.

British Birds.

[*British Birds.* Vol. xi., June 1917–May 1918. London (Witherby).]

In November last Mr. H. F. Witherby accepted a commission in the R.N.V.R., and as this involved his absence from England, he had temporarily to relinquish the editorship of '*British Birds.*' His place has been taken by the Rev. F. C. R. Jourdain, who had previously acted as Assistant Editor. We understand that Lieut. Witherby is doing exceedingly good work where he is now stationed and is undoubtedly assisting to "get on with the war," and we wish him all good luck.

Perhaps the most important articles in the present volume of '*British Birds*' are those on moult. Mr. Witherby himself, before he left England, published two contributions on the moults of the British Warblers and Thrushes. These

birds all have a postnuptial moult, and often a spring moult as well, though there is a good deal of variation in this respect, even among birds of the same genus.

Miss Annie Jackson has taken up the same subject in regard to the British Waders, and four parts of her work are printed in the present volume. In the first contribution she divides Waders into three classes according to the extent of the prenuptial moult. (1) Those in which the moult is partial and confined to the body-feathers, such as the Lapwing and Woodcock. (2) Those in which some of the wing- and tail-feathers are involved as well, as is the case with the majority of the Waders. (3) Those in which all the remiges and rectrices, as well as the body-feathers, are renewed, as in the Stints and the Common and Spotted Sandpiper. Each genus is reviewed in detail, and the results are very interesting. In another paper she gives us some information as to when, in the case of migrant Waders, the two moults take place, whether on the breeding-grounds or in the winter quarters or during actual migration. No one interested in moult and plumage change should fail to read these papers of Lieut. Witherby and Miss Jackson.

Other articles of interest in the present volume deal with the life-history of the Hobby, by the late Capt. C. S. Meares and by Capt. Ashley, of the Kingfisher by Mr. W. Rowan, of the Moorhen by Frances Pitt; while a paper by Lieut. D. H. Meares on the Marsh Warbler is illustrated with a coloured plate by Mr. C. E. Arnold, a new departure, if we mistake not, in 'British Birds.'

The second authentic record of the occurrence of the Buff-backed Heron (*Ardeola ibis*) in the British Islands is detailed by Mr. F. W. Snelling. The bird, a male, was shot on Breydon Marshes, in Norfolk, on 23 October, 1917, and was mounted by Mr. E. C. Saunders, of Great Yarmouth.

To the late Mr. C. J. Alexander, who was recently killed at the front, we are indebted for two papers on Italian ornithology. The first deals with the altitudinal distribution of birds in the mountains of central Italy. This is a

subject which has received much more attention in America than in Europe, and deserves further study. The second contribution deals with the singing of birds in their winter quarters, and on migration as observed in central Italy.

Finally, Capt. Hugh S. Gladstone presents us with a copious biographical and bibliographical study of John Hunt (1777-1842), a Norwich ornithologist as well as stationer, schoolmaster, engineer, and taxidermist, who migrated to America, where he died. He was the author of 'British Ornithology,' an unfinished work and now one of the rarest of bird-books, only five copies of which are known to Mr. Mullens.

Cassinia.

[*Cassinia*. A Bird Annual. Proceedings of the Delaware Valley Ornithological Club. No. xxi. for 1917. Philadelphia, 1918.]

The last number of '*Cassinia*' has as a frontispiece a portrait of the late Mr. Samuel Wright and a eulogistic biography of this promising young Philadelphian ornithologist, who died after an attack of pneumonia early last year, at the age of 41, by Mr. Witmer Stone. During the earlier part of his life he worked with Mr. Stone at the valuable collection of birds belonging to the National Academy of Sciences; later on he entered business, but always kept up his love of birds, and contributed several articles to '*Cassinia*.'

An article by Mr. T. D. Carter deals with the summer birds of the attractive Pocono Lake region up the Delaware River, where many birds not found in the plains country round Philadelphia breed.

It is a remarkable fact that the Evening Grosbeak (*Hesperiphona v. vespertina*), which breeds in the pine-forests of the central parts of the North American continent, has of late years extended its winter wandering to the Eastern sea-board States, where formerly it was practically unknown, and Mr. S. Scoville contributes a pleasant account of his meetings with this bird in the winter months

of 1916-17. For some reason or other the first observers of this Grosbeak, Schoolcraft and Major Delafield, in the Lake Superior District in the early twenties of the last century, believed that it only appeared at twilight, and hence its names—the specific one due to Wm. Cooper and the generic one to Bonaparte. Both refer to this supposed peculiarity, which, however, has no existence in reality.

The last article, compiled from records made by members of the Delaware Valley Ornithological Club by Mr. Stone, deals with the spring migration of 1917 in the Philadelphian area. It alludes to the abundance of Hudsonian Chickadees and Evening Grosbeaks, and also to the lateness of the May migrants, due probably to an abnormal spell of cold during the first half of that month.

El Hornero.

[El Hornero. Revista de la Sociedad ornitológica del Plata para el estudio y protección de las aves de la Argentina y países vecinos, Tomo i. N. 1, Octubre 1917. Museo Nacional de Historia Natural, Buenos Aires.]

We welcome the appearance of a new contemporary Journal of Ornithology from the Argentine. It is named after one of the most characteristic birds of the pampas, called the Oven-bird by English-speaking people, El Hornero by the Spaniards, *Furnarius rufus* by systematic ornithologists. It builds a nest of mud as large as a baker's oven on a horizontal branch of a tree, hence its name, and is figured in a little cut on the wrapper of the new Journal.

The Editor of 'El Hornero' is Dr. Roberto Dabbene, of the Buenos Aires Museum, and after a short introduction on the constitution and prospective work to be undertaken by the new society, he contributes an account of the Swifts found in Argentina, with a key to the genera and series of figures illustrating the generic characters modelled on those to be found in Ridgway's works, together with a list of species with full references. In another article, also by the editor, is an account of a collection of birds recently made on the little island of Martin Garcia lying in the estuary of

the Plate river. It contains notes on taxonomy and distribution, and a carefully worked-out synonymy with full references.

Prof. M. Doello-Jurado, who is also we believe connected with the Buenos Aires Museum, contributes an interesting account of a journey recently made by him to Puerto Deseado in Patagonia. This spot is perhaps better known to English readers as Port Desire, and was visited by Darwin in 1834 during his voyage in the 'Beagle.' On some of the islets off this coast there breeds the Penguin (*Spheniscus magellanicus*) in countless numbers, reminding the writer of this notice of similar islands off the coast of South Africa where the allied *S. demersus* is to be found. With them was noticed *Phalacrocorax vigua* nesting in the branches of the stunted trees and bushes, while another species of Cormorant (*P. gaimardi*) builds its nests against the cliffs in an entirely different situation. Photographs of the Penguins and of *P. gaimardi* and its eggs illustrate this article.

In a paper entitled "Distracciones ornitológicas," Señor M. Selva proposes a new classification of birds, based, so far as we can make out, on their general habits, and he sets down his results on a rather formidable diagrammatic table, which however we confess, owing probably to our ignorance of the Spanish language, we cannot properly appreciate.

We hope that 'El Hornero' will continue and prosper and advance our knowledge of South American birds, and we wish it a long and useful career.

List of other Ornithological Publications received.

Auk. (Vol. xxxv. No. 2, 1918.)

Avicultural Magazine. (Third Series, Vol. ix. Nos. 6-8, 1918.)

Bird-Lore. (Vol. xx. No. 2, 1918.)

Condor. (Vol. xx. No. 2, 1918.)

Irish Naturalist. (Vol. xxvii. Nos. 4-5, 1918.)

Journ. Bombay N. H. Soc. (Vol. xxv. No. 3, 1918.)

Journ. Fed. Malay States Mus. (Vol. viii. pt. iv. 1917.)

Journ. Nat. Hist. Soc. Siam. (Vol. ii. No. 4, 1917.)

Scottish Naturalist. (Nos. 76-77, 1918.)

XXVII.—*Letters, Extracts, and Notes.*

Siamese Birds.

SIR,—It has been pointed out to me by you that I have omitted to cite types for a number of the races proposed in my recent paper (*antea*, pp. 76–114, 180–234). For various reasons I have deliberately refrained from doing so in the case of those specimens which are not in my own collection, but in connection with them have given a typical locality (the only or first place mentioned) which I hope will identify the geographical forms with sufficient preciseness. I hope later to publish data of *heautotypes* if meanwhile *plesiotypes* have not been selected by other ornithologists.

My bird, the type of *Chloropsis aurifroas inornatus*, was, however, not specially mentioned; it is the first specimen recorded, the adult male with measurements, and was collected on 14 October, 1916.

The type of *Gecinus viridis robinsoni* is an adult female from Ginting Bidai, Selangor-Pahang Boundary, Malay States, 2000 ft. Collected by myself on 5 April, 1917, and now in the collection of the Federated Malay States Museums.

I wish to correct an error in my remarks under *Dissemurus paradiseus malayensis* (p. 229). I was at fault in stating that this name of Blyth's was first published by Jerdon as *Edolius malayensis*; it was first published by Blyth himself [Journ. Asiat. Soc. Bengal, xxviii. p. 272 (1859)] in connection with Andamanese and Malayan birds.

The former were afterwards separated by Beavan as *Edolius affinis* (Ibis, 1867, p. 323), but the name is antedated by *Edolius affinis* Blyth [Journ. Asiat. Soc. Bengal, xi. p. 174 (1842)] for a form of *Dicrurus* of the Malay Peninsula, and Richmond has substituted for it *Dissemurus malabaricus otiosus* [Proc. U.S. Nat. Mus. xxv. p. 290 (1902)].

Obviously Blyth proposed *malayensis* with special reference to Malayan birds, but an Andamanese specimen was mentioned first, and in order to prevent attempt to upset more recent nomenclature and to avoid the confusion which the application of *malayensis* to the Andamanese race would cause, I now restrict it to the form occurring in the Malay Peninsula north of lat. 4°; the types would be the specimens from Penang mentioned by Blyth in his original description, if in existence.

An author is at a disadvantage in not being able to revise his proofs, and the following corrections should be made to my paper :—

Species No. 4, line 1, *for* (Blyth) *read* (Swinhoe).

- | | | | | | | | |
|---|-----|---|-----|---|---------------------|------|--------------------------------|
| „ | 49, | „ | 4, | „ | p. 317 | „ | p. 89. |
| „ | 51, | „ | 23, | „ | east | „ | west. |
| „ | 55, | „ | 23, | „ | <i>wrayi</i> Grant, | read | <i>rodgeri</i> Hart. & Butler. |
| „ | 60, | „ | 23, | „ | Lang Kawi | „ | Langkawi. |
| „ | „ | „ | 45, | „ | „ | „ | „ |
| „ | „ | „ | 48, | „ | „ | „ | „ |
| „ | 62, | „ | 15, | <i>between white and tail-feathers insert patches on the.</i> | | | |
| „ | 67, | „ | 29, | <i>for five read fine.</i> | | | |
| „ | 73, | „ | 31, | „ | dull | „ | gull. |
| „ | „ | „ | 42, | „ | „ | „ | „ |
| „ | 76, | „ | 5, | <i>between near and Liant insert Cape.</i> | | | |
| „ | 78, | „ | 5, | <i>for males read male.</i> | | | |
| „ | 87, | „ | 22, | „ | Japan | „ | Javan. |
| „ | 88, | „ | 2, | „ | 1890 | „ | 1900. |

Kuala Lumpur,
12 February, 1918.

C. BODEN KLOSS.

Australian Parrots.

SIR,—The rather irreconcilable views which Mr. Mathews and I appear to hold, show, I think, that there is room for considerable investigation of the plumage-changes and external sexual differences of the Australian Parrots.

I do not like to appear to doubt the accuracy of Mr. Mathews' collectors, but I must say I should be exceedingly interested and very surprised if he could tell me that he had himself examined in the flesh any of the following :—

1. An *adult* male Roseate or Leadbeater's Cockatoo with a red or pale brown iris.
2. An *adult* female Roseate or Leadbeater's Cockatoo with a black iris.
3. A female *Platycercus icterotis*, with normal reproductive organs, with the entire head, neck, and breast bright crimson, unmarked with green or yellow, and bright yellow cheek-patches like a male's.
4. A female *Purpureicephalus spurius*, with normal reproductive organs, which has a bright red cap, unmarked with green, and cheeks as bright as a fully-plumaged male's.

It does seem strange that all, or nearly all, birds of the species just mentioned, that have been imported alive into England, should belong to local races possessing peculiarities which have not been detected in Australia—especially so in the case of the Roseate Cockatoo which used to be brought over in hundreds.

I can quite understand that preserved skins would not show a difference in size between the heads of male and female *Platycercus* and *Barnardius* Parrakeets, but I should expect a difference in skull measurements, and also a constant superiority of males over females of the same age and race in the measurement of the upper mandible across its widest portion.

I must suspend judgment on the question of the age at which *Platycercine* Parrakeets assume adult plumage in their native land, but it is a very odd thing and quite contrary to the whole experience of aviculture, if conditions of captivity which lower the bird's vitality and tend to

impair its health, should, in the case of this one group, stimulate the assumption of adult plumage at an abnormally early age. Indeed, it is incredible that the same conditions of captivity can cause a cock Stanley Parrakeet to come into full colour a year or two before the natural time and yet keep a hen in semi-immature dress all her life. Mr. Mathews will pardon me if I suggest that it can hardly be an "easy" matter to ascertain by observation of unmarked wild birds, of a rather wandering disposition, the exact period taken by a particular individual to assume adult plumage—when that period is more than 12 months. It would, I know, bother me exceedingly to prove by observation of wild Herring-Gulls that the time they took to lose their immature dress in confinement was abnormal, and longer or shorter than the natural one.

Although I have examined some dozens of birds, many of them in "importation" plumage, coming from different regions, I have never seen an adult male *Platycercus eximius* with any but red feathers round the eye and never an adult female which had not a few tiny greenish ones. The latter, however, would not be likely to be visible in a skin which had not been very carefully prepared. The figure of *Neophema venusta* interested me as it represented a bird with a decidedly golden head. I have had quite a number of *N. venusta* of both sexes and never yet saw one with the head of a different shade from the rest of the body; some of my birds were said to have come from Tasmania.

It does seem a very great pity that Australian naturalists should have taken no serious steps to preserve some of their beautiful Parrakeets from extinction by breeding them in captivity. Once the numbers of a certain species have become so reduced that their annual increase does not equal the toll taken by enemies, natural and otherwise, the fate of that species, in a wild state, is sealed, and strict laws against capture and export alive to other countries are useless, or worse than useless. The average Australian's idea of aviculture, as far as native Parrakeets are concerned,

appears to be keeping them in small cages, for which they are unsuited, and trying to teach them to talk, for which they have little aptitude. Many of the very last living examples of the Turquoise, Splendid Grass-Parrakeet, and Beautiful Parrakeet appear, from enquiries I have made, to have ended their days as cage-birds, whereas, if their owners had had the sense to give them proper aviary accommodation, they might have perpetuated the species indefinitely and made a handsome profit for their own pockets.

Given a favourable climate, Parrakeets are among the easiest of birds to breed in confinement if adult pairs are kept separate and are provided with plenty of green food as well as seed. Grass-Parrakeets need to have the outer flight of their aviary lined with string-netting, as they are very prone to kill themselves by flying against wire, but in all other respects they are as easy to manage as their common relatives.

Your obedient servant,

Victoria Barracks,
Portsmouth.
1 May, 1918.

TAVISTOCK.

Protection of Birds.

SIR,—The serious diminution in the numbers of our resident insect-eating birds, which resulted from the severe winter of 1916–17, and also from the widespread destruction of birds and eggs in the summer of 1917, is a cause for grave anxiety at the present time.

Plagues of insect-life of various kinds were reported in the summer and autumn from many districts, and but for the services of summer migrants would have proved alarmingly destructive to corn, grass, and green crops and to fruit. This year a similar and greater danger faces us. Under the most favourable conditions it must be some years before many of our small birds regain their normal status. The continual ploughing up of old grassland multiplies insect-pests; the increased crops afford them

increased food and thus stimulate the hatching out of countless swarms.

Owing to these circumstances the protection and preservation of insect-eating birds, and of those birds which destroy small vermin, is a matter of urgent necessity. If the country is to have a sufficiency of food-crops, those crops must not merely be planted and tended; they must be guarded as far as possible from the perpetual menace of ravage and devastation by insects. Hand-labour is wholly inadequate to the task, even if it were abundantly to be had.

We therefore strongly urge that, in the interests of national food-supplies, this matter be taken up promptly by Agricultural bodies, by Gardening and Allotment associations, and by elementary and secondary schools, with a view to checking the destruction of useful birds and their nests and eggs, and the preservation of insect-eating species, both resident and migratory.

Difference of opinion exists as to the economic status of a few species; but all who have studied economic ornithology and entomology are agreed (1) that the great majority of wild birds are beneficial to man; (2) that the insect-eating and vermin-eating species in particular are invaluable to him in field and gardens; (3) that children should not be permitted to take part in the destruction of birds and eggs even of species deemed injurious, since useful ones inevitably suffer also.

BEDFORD.

G. L. COURTHOPE, Major, M.P.

ARTHUR DENDY, F.R.S., Professor of Zoology in the University of London.

F. W. GAMBLE, D.Sc., F.R.S., Professor of Zoology, University of Birmingham.

J. STANLEY GARDINER, F.R.S., F.L.S., Professor of Zoology, University of Cambridge.

S. F. HARMER, F.R.S., Keeper of Zoology, British Museum (Natural History).

W. A. HERDMAN, D.Sc., LL.D., F.R.S., Professor of Zoology,
University of Liverpool.

SYDNEY F. HICKSON, D.Sc., F.R.S., Professor of Zoology,
Victoria University of Manchester.

H. H. JOHNSTON, G.C.M.G., D.Sc.

E. G. B. MEADE-WALDO, F.Z.S., M.B.O.U.

P. CHALMERS MITCHELL, F.R.S., Secretary, Zoological Society
of London.

ROBERT NEWSTEAD, M.Sc., F.R.S., Professor of Entomology,
University of Liverpool.

W. R. OGILVIE-GRANT, F.Z.S., M.B.O.U., Keeper of Orni-
thology, British Museum.

MONTAGU SHARPE, D.L., Chairman of Council, Royal Society
for the Protection of Birds.

J. ARTHUR THOMSON, LL.D., Regius Professor of Natural
History in the University of Aberdeen.

The B. O. U. and Modern Nomenclature.

SIR,—In view of what transpired at the Annual General Meeting of the B. O. U. on March 13th, and of the regrettable difference of opinion that exists in regard to the present method of “advancing” ornithology, I ask myself the question whether, at my time of life, it is worth while to remain a member of the Union, now no longer deserving of the name. It seems to me that the time has arrived for me to come to some decision in the matter. One must either continue to be a member of the Union and *support* it, or *leave* it. I have decided to leave it for the following, amongst other reasons, to which I have already referred in a letter, of which only a portion was printed, in the last number of ‘The Ibis.’

I feel that I can no longer subscribe to a journal which, in spite of remonstrance,

- (1) Disregards the Stricklandian Code of Rules for Zoological Nomenclature, which was unanimously approved in 1842, 1863, 1878, and 1908 by committees of eminent British biologists ;

- (2) Causes great confusion and a palpable injustice to Linnæus (in violation of the Stricklandian Code) by substituting the 10th edition of the 'Systema Naturæ' for the 12th and last edition revised and amended by the author in 1766; and
- (3) Ignores the simplicity and time-honoured employment of binomial names by making extravagant use of trinomials, which I regard as not only undesirable (with certain exceptions) but fantastical, and in many cases ridiculous.

The absurdity to which such a system has now been reduced may be seen in a list of 180 birds published in the last number of 'The Ibis' (April 1918, pp. 258-287). About five-sixths of them are designated by trinomials, and although the majority are amongst the most familiar of our British birds, they are so disguised by this new-fangled nomenclature as to be unrecognizable except by the vernacular English names appended. Many of them, moreover, bear different names on different pages of the same volume, testifying to the want of uniformity in the nomenclature adopted.

Weary of protesting against these objectionable features in a journal designed to *advance* the study of ornithology, I can no longer subscribe to the publication of views which I do not share, and I have therefore requested that my name may be removed from the list of Members of the British Ornithologists' Union. I have neither time nor inclination for further discussion on the subject.

Your obedient servant,

Weybridge, June 1, 1918.

JAMES EDMUND HARTING.

[With regard to the points raised in Mr. Harting's letter, we think almost all ornithologists must agree that if our science is to remain bound to the Stricklandian Code of 1842 there can be very slight hope of any progress. Progress means change, absence of change means stagnation.

Apart from this, there is a great English-speaking nation across the Atlantic who must be taken into account, unless our science is to be involved in hopeless confusion.

In regard to the second paragraph, we may say that we are, so far as our own private views are concerned, quite in agreement with him, and we regret as much as he does the substitution of the 10th for the 12th edition of Linnæus's 'Systema' as the starting-point of nomenclature. The matter was decided, however, by the committee appointed to report on the rules of zoological nomenclature by the International Zoological Congress in 1897, and the decision was accepted by the Congress itself, and it appears to us that it is our duty to accept such a decision if it will lead to uniformity and fixity. To go back now to the 12th edition would make confusion worse confounded.

We do not think any present-day worker in systematic ornithology can ignore subspecies or their true significance and utility. Some authors may carry the matter too far, and propose to recognize differences between local forms imperceptible to other workers; but, after all, even our predecessors often did the same thing in regard to what they termed species.

Finally, in regard to the paper by Miss Baxter and Miss Rintoul in the last number of 'The Ibis,' we would point out that the nomenclature follows exactly that laid down in the recently published 'B. O. U. List,' except that the specific name is in many cases repeated to show that the authors are alluding to the typical, which is in most cases the British race, and not to the species in its wider sense. How, therefore, Mr. Harting can say that "they are so disguised by this new-fangled nomenclature as to be unrecognizable" passes our comprehension.—ED.]

SIR,—Mr. Harting apparently bases his right to dictate to the Editor of 'The Ibis,' the compilers of the 'B. O. U. List,' and those of the 'Hand List' on the ground that he

has been for fifty years a member of the British Ornithologists' Union. The first personal pronoun occurs no fewer than twenty times in this remarkable letter.

As a field naturalist Mr. Harting has recorded his discovery of the Stonechat nesting deep in a hole in an old stone wall, and has obtained eggs of the Long-eared Owl from a hollow tree. His suggested identification of *Bambusicola* as a hybrid between the Pheasant and Partridge is fresh in the minds of readers of the 'Field.' His discovery that the Ring-Ouzel is resident in the British Isles, and the publication of a 'Handbook of British Birds,' in which full details of some 33 occurrences of the Great Black Woodpecker are given (not one of which is worthy of credit), certainly form a remarkable record, but one which will scarcely give him the right to speak *ex cathedra* on ornithology.

We may take it for granted, then, that Mr. Harting's claim is based on seniority. But if we alter all our system of nomenclature and break away from the International Rules to please the senior member of the Union, are we not faced with the possibility that twenty or thirty years hence the oldest member may be one of the present younger generation? In that case we should only be following precedent by altering the names again in accordance with his views, and this process might be repeated indefinitely.

The suggestion is really too puerile for serious consideration, but one would think that even Mr. Harting would have realized by this time that ornithology is not merely the hobby of a clique of English writers, but a section of zoology and a world-wide study. Scientific nomenclature which is confined to one country is worthless, as to be of any value it should be universal. This can only be gained by strict and loyal observance of rules.

It is curious that the one really serious error committed by the B. O. U. Committee is selected for commendation by Mr. Harting. To form a list of *nomina conservanda* and

to publish it after submitting it to the International Committee was quite justifiable, but the correct names under the rules should have been given, and not replaced by *nomina conservanda*, without the sanction of the Committee, as has unfortunately been done. If other countries follow suit and restore discarded names at will, we are brought face to face with nomenclatural confusion once more. With equal reason might the ornithologists of Hampshire declare that they proposed to return to the scientific names used by Gilbert White!

Recent events might have taught us that there is a world outside the limits of the British Isles, and that in the United States alone we have an English-speaking nation a hundred millions strong. Surely we gain more by discarding the ill-omened name of *boschas*, to which Mr. Chapman is so devoted, and adopting the strictly correct name of *platyrhyncha*, which is known and understood from the Atlantic to the Pacific.

Yours &c.,

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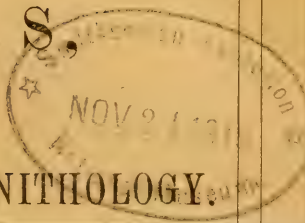
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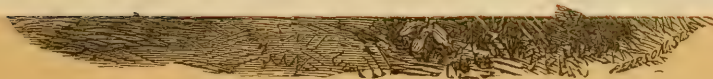
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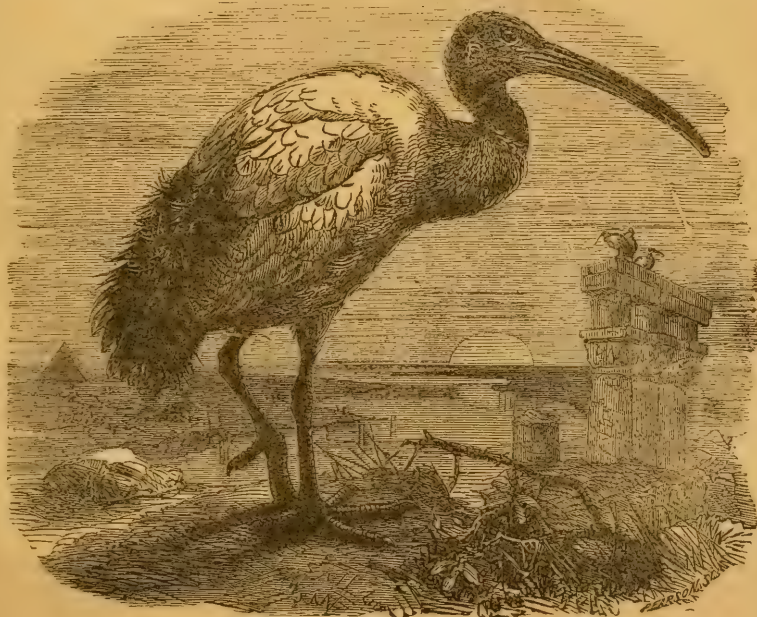
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XXVIII.—*The Reversed Under Wing-Coverts of Birds and their Modifications, as exemplified in the Birds of West Africa.* By GEORGE L. BATES, M.B.O.U.

(Text-figures 5-12.)

Introduction.

THE two rows of feathers which form the subject of this paper are those called the major and the median under coverts of the wing, or the under coverts next to the remiges. The terms "major" and "median" were adopted doubtless on account of analogy with the upper coverts, but are not as appropriate in the case of the under as of the upper coverts, since, as will appear later, the major under coverts are often the smaller of the two series, and the median under coverts are often larger than either the major or the minor coverts, or in many cases smaller than either. The major and the median under coverts are distinguished from all the other feathers on the underside of the wing, in that they are placed facing downwards, or in the same position as the remiges; while all other feathers on the underside of the wing face upwards, in the opposite position to the remiges, *i. e.* stand face to face with them. Considered with reference to the remiges as a norm, it is these

other feathers, consisting of the minor and the marginal under coverts, that are *reversed*; but considered with reference to the position that seems most natural for the under surface of the wing,—the position of the majority of the feathers,—the two rows, the major and the median under coverts, are reversed: hence the term “reversed coverts” is applied to them. The fact of the peculiar position of the reversed coverts was pointed out by Sundevall (1), but his explanation of it must give place to that of Wray (2), which has since been generally accepted, and is here given in the author’s own words (p. 353):—“These feathers or their antetypes were originally on the dorsal surface and have been carried down to the ventral in the formation of the ‘ala membrana’ by the excessive development of the remiges and tectrices majores.” Wray noted that the embryo wing is rounded in section, there being no “ala membrana,” and that the inferior major and median coverts are at first “distinctly more on the dorsal half of the rounded edge of the wing than its ventral.”

When one becomes accustomed to thinking of the reversed coverts as really belonging to the upper surface of the wing, though pushed over to the under surface in the manner described, other facts besides their reversed position come to be understood. Sundevall (1) noted that “they often retain rigidity and straightness and an external form which give them some resemblance to quill feathers.” It may be added that they sometimes resemble even in colour the remiges and upper coverts, and contrast with the minor under coverts. The reversed under coverts in the large Plantain-eater, *Corythæola cristata*, have their dorsal surfaces of the same beautiful blue colour as those of the remiges, though these surfaces lie flat against the bases of the remiges and upper coverts and are never exposed to the light, while the exposed ventral surfaces are dull black like those of the remiges, and like other feathers of the under-side of the wing: thus the reversed coverts are brightly coloured exactly like the upper wing-feathers even though in their case the bright colour is never seen,

Practically nothing has hitherto been attempted in the way of particular descriptions of the various modifications of the reversed under coverts in different groups of birds. There is more on this subject in Sundevall's treatise (1) than in any succeeding memoir that I have seen. There it is stated as a universal fact, what will be seen in the sequel to be only generally true, that "on the cubitus the feathers of the first of these two series are firmly attached and just like the remiges, with the inner (posterior) margin free, covering the outer (anterior) margin of the next feather; but in the second series they are movable, and lie with the margins in the opposite direction to the former, so that the outer edge of each feather is free and covers the inner edge of the next one." Sundevall says he never found an exception to the above rule, and Pycraft (3) says the same thing; and they both add that the invariable overlap is a certain means of telling, when part or all of one series is absent, to which of the two series the remaining feathers belong. The numerous examinations of wings to be described in the following pages clearly show the above view to be wrong; the overlap is not invariable in either series of the reversed coverts, and is no certain criterion for deciding to which of the two rows any particular feathers belong.

In the space of two or three pages Sundevall describes the characteristic modifications of the reversed under coverts in quite a variety of birds. Of *Columba* he says that the major under coverts on the hand are "first interrupted, then again continued," while the median coverts upon the hand "seem to form a single row with" the major coverts. The facts as seen by him agree exactly with those found by me in other Doves, as described hereafter but are differently interpreted—the major coverts should really be regarded as one uninterrupted series on cubitus and manus, which changes its overlap on part of the manus; and the feathers which Sundevall describes as median coverts, "which seem to form a single row with" the major, are really major coverts overlapped the contrary way. Sundevall's slight observations on the reversed under coverts of other birds

likewise agree very well, as to the facts, with the detailed and extensive ones here to be recorded. He notes the varying tendency to be reduced in size, or to disappear, in the different parts of these two series of feathers. The different degrees of reduction or disappearance, together with variations in the overlap, as observed in different birds and groups of birds, with the manner of the derivation of one condition from another, so far as that may be traced, form the subject of the present paper.

Before leaving the literature relating to the reversed under coverts, it is proper to mention the important writings of Goodchild (4, 5) on a similar subject, the cubital upper coverts. In the different series of upper coverts on the cubitus he found variations characteristic of groups of birds, particularly as regards their overlap. He introduced and defined the terms "distal" and "proximal overlap," which have been used also by other writers since.

In the following pages another way of describing the overlap is employed, and the terms "distal" and "proximal overlap" are not used. I am aware that this terminology should not have been discarded without ample reason. My reason is that it is liable to ambiguity and confusion, in more ways than one, and that it not only may be, but has been, used differently by different writers. The first difficulty is that "distal overlap" does not tell us whether the distal edge is the one that covers the edge of the other feather, or the one that is covered by it. In the former sense it is used by Goodchild; but it is used in the latter (and opposite) sense by Gadow both in Bronn's 'Tierreich,' chapter on Pterylography (p. 558), and in Newton's 'Dictionary of Birds,' article "Tectrices" (p. 951). But still another chance for ambiguity arises, when the under surface of the wing is considered as well as the upper one, which alone was kept in view by Goodchild. Are we, then, to view the underside of the wing as if held in the hand or laid on a table, upside down, or in its natural position on the bird? The latter view can be taken only in imagination; but it is the consistent one if the whole of the feathering of the wing is to be thought of at once, as should certainly be

done when studying these reversed coverts, which properly belong to the upper surface of the wing, so that upper coverts, remiges, and reversed coverts may all be viewed alike. This was evidently the method of Pycraft, when he calls the overlap of the major under coverts, as of the remiges, "distal," and by Gadow when he calls the overlap of both "proximal." But if we view the wing as held upside down, the only way in which the reversed coverts can be actually looked at, the overlap of these must be described in the contrary terms to that of the remiges, though it is actually the same as that of the remiges.

In view of these manifold confusions, the terms "distal" and "proximal overlap" are not used in the following observations; but the simple method is employed of referring always to the remiges, with their invariable overlap, as a standard, and saying "overlap the same as the remiges" or "conforming to the remiges," or briefly "overlap conforming," and in the case of the other overlap "contrary to the remiges," or "overlap contrary."

A list of the publications referred to in this introductory portion of my paper is given here instead of at the end, since they are not referred to again; they do not pretend to constitute a full "bibliography."

- (1) SUNDEVALL, C. J. "On the Wings of Birds." (Translated from the Swedish.) *Ibis*, 1886, pp. 389-457. (Reversed coverts, pp. 418-421.)
- (2) WRAY, R. S. "On some Points in the Morphology of the Wing of Birds." *P. Z. S.* 1887, pp. 343-357.
- (3) PYCRAFT, W. P. "Pterylography of Birds' Wings." Leicester, 1890.
- (4) GOODCHILD, J. G. "Observations on the Disposition of the Cubital Coverts in Birds." *P. Z. S.* 1886, pp. 184-203.
- (5) Same. "The Cubital Coverts of the Euornithæ." *Proc. Roy. Soc. Edin.* vol. x. 1890-91, pp. 317-333.
- (6) GADOW, H. *Bronn's Klassen und Ordnungen des Thierreichs. Vögel. Anatomischer Theil.* 1891.
- (7) NEWTON, A. *Dictionary of Birds*, 1893-96, article "Tectrices."

Detailed Examination of the Reversed Coverts in
Various Birds.

THE NORMAL TYPE.—One type of major and median under coverts is found in many large birds, belonging, for the most part, to orders that must be regarded as primitive or little specialized. In this type the major under coverts form a complete series, of large feathers, with a uniform conforming overlap; and the median series is complete on the cubitus and extends on the proximal part, sometimes as far as the middle of the manus, and consists of smaller feathers, all having the contrary overlap. In the following account, birds having this normal type of reversed under coverts will be given first, and the others will follow in an order intended to indicate roughly the amount of divergence from the normal type. The arrangement is not intended to be systematic—rather it is purposely not so, as the bearing of this examination on questions of phylogenetic classification must be left till the close.

Pteronetta hartlaubi. Eight specimens examined, including Nos. 5543, 5839 & 5840, the others not saved. (Text-fig. 5.)

The major under coverts all have the conforming overlap. The series is complete, there being one covert for each remex, and an extra one between the 4th and the 5th on the cubitus. The 11th or most distal one on the manus is just equal in length to its remex (the "remicle"), each being 30–33 mm. long; this covert hides the remicle which is very narrow.

The median under coverts form a complete row on the cubitus and extend to six feathers on the manus, besides another extra one that is exactly at the carpal joint, as in the accompanying diagram (text-fig. 6). These median coverts thus do not exactly correspond in position to the major coverts, but close upon one another and stand nearer together, to a slight extent.

The overlap of the median under coverts is contrary to that of the remiges, with the exception, at least in some

cases, of those nearest the elbow-joint. This exception was noted only in two or three of the last specimens examined ; but I think it may have escaped notice in the others, since

Text-figure 5.

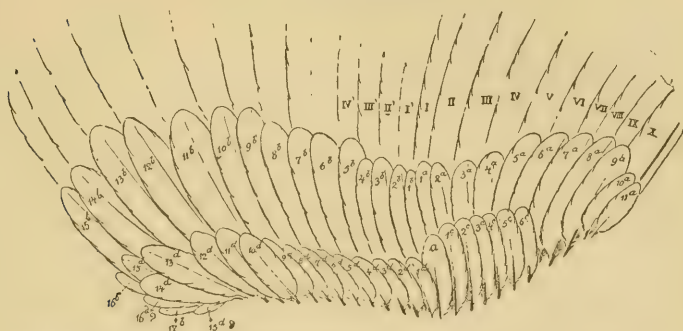


Diagram of the feather-arrangement of the underside of the wing of
Pteronetta hartlaubi.

i-x. Primaries.

i'-iv', etc. Secondaries.

1^a-11^a. Manual major upper wing-coverts.

1^b-16^b. Cubital major u.w.c.

1^c-6^c. Manual median u.w.c.

1^d-16^d. Cubital median u.w.c.

α. Additional carpal median covert.

Text-figure 6.

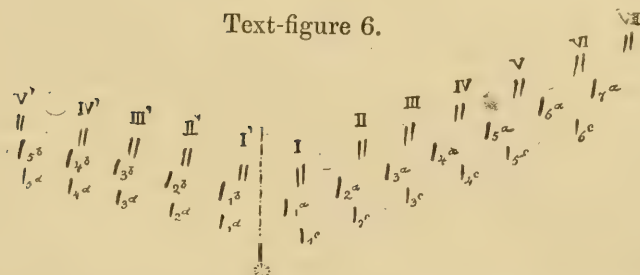


Diagram of the wing of *Pteronetta hartlaubi* showing the position of the extra median covert marked (*); other lettering as before.

at first I was accustomed to attribute any exceptional overlap to disarrangement. That the exceptional conforming

overlap of these feathers was not due to disarrangement in the cases where it was noted, is proved by the more extensive downy fringe on the distal edge of each, showing that that edge naturally lay covered.

Rhynchops flavirostris. One specimen examined, No. 5565.

Major under coverts a complete row, with the conforming overlap. The 11th on the manus is larger than its remex (the remicle).

Median under coverts with the contrary overlap, the row being complete on the cubitus, with in addition one just at the carpal joint and two wholly on the manus.

Totanus glareola. One specimen examined, No. 5646.

Major under coverts a complete row, with the conforming overlap. The 11th on the manus just equals the remicle.

Median under coverts with the contrary overlap, the row being complete on the cubitus, with three feathers on the manus.

Charadrius forbesi. One specimen examined, No. 5870.

Resembles in every respect *Totanus glareola*.

Actophilus africanus. One specimen examined, No. 5727.

Major under coverts with the conforming overlap; row complete, including the 11th on the manus, though I failed to find any 11th remex.

Median under coverts with the contrary overlap, the row complete on the cubitus, and one feather of this row on the manus.

Plotus rufus. One specimen examined (shot at Akonolinga, 12 January, 1914).

Major under coverts with the conforming overlap; row complete. There are also two small supernumerary feathers at the carpal joint, apparently in the row of the major coverts.

Median under coverts entirely wanting, unless, as is probable, the two small feathers at the carpal joint, just mentioned, are in reality a remnant of the median row.

The space between the quills of the 1st manual and the 1st cubital remex, in the wing of this Snake-bird, is very wide, as is also that between the corresponding major under coverts. Hence two small feathers of the median row, obsolete elsewhere, naturally persist in this vacant space and tend to close up into the major row.

Ardea goliath. One specimen examined, shot 9 September, 1916.

Major under coverts forming a complete row, with an extra one between the 4th and 5th cubital remiges; the 11th on the manus 62 mm. long, completely hiding the remicle, which is only half as long; those on the cubitus not very long, growing shorter towards the elbow. Overlap conforming on the cubitus; contrary on the proximal part, and conforming on the distal part, of the manus. The two wings differ a little in the extent of the portion of this series having the contrary overlap, this portion comprising the 1st to the 4th on one wing, and the 1st to the 5th or 6th on the other.

Median under coverts complete on the cubitus, there being one for each major covert; no extra one at the carpal joint, but one on the manus situated slightly to the distal side of the first manual major covert. (Overlap doubtless contrary, but not mentioned in notes.)

As this is the first case to be described of the exceptional contrary overlap in the major under coverts on the proximal part of the manus, it is proper to note: (1) that in this large bird, with the feathers firmly placed, there could have been no mistake; and (2) that it is impossible to regard these contrarily overlapped feathers as being really median coverts, because in this bird the median coverts form a very distinct row situated at some distance from the major, and extending on to the manus.

Nycticorax leuconotus. One specimen examined, No. 5608.

Major under coverts forming a complete row, those on the cubitus smaller than those on the manus, the 11th on the

manus (at tip of wing) longer than the 10th. Overlap conforming, with the exception of "some of them on the middle portion of the manus, which have the contrary overlap": thus the fact is stated in my note, and the additional remark is made "but they may have been disarranged." As this bird's wings were among the first examined, I still had the preconceived notion that all the feathers of each row must be overlapped alike.

Median under coverts complete on the cubitus and large, exceeding the major coverts, and near the elbow equalling, and in the case of the last two ones, the 17th and 18th, exceeding, the corresponding remiges; two of this row present on the manus. All are stated to have the contrary overlap.

Hieraaëtus lucani. One specimen examined, No. 5668.

Major under coverts, long feathers, forming a complete row, with eleven on the manus; overlap conforming.

Median under coverts forming a complete row on the cubitus, and extending on to the manus to one feather, besides one just at the joint. The feathers of this row are whitish, and short, being a little exceeded by the black minor coverts.

In all Accipitrine birds the under coverts have their bases hidden in a fluffy mass of down, and the median under coverts being small are often nearly hidden.

Urotriorchis macrurus. Two specimens examined, Nos. 5548 & 5802.

Major under coverts forming a complete row, with eleven on the manus (and the remicle lacking, at least in one of the specimens). Of the first examined of these two specimens, my note is, that the major under coverts have the conforming overlap; of the other, that two or three of these coverts on the proximal part of the manus have the contrary overlap.

Median under coverts found on the cubitus, and two (in one specimen) or one (in the other) on the manus. These coverts are small and loose feathers, but have the contrary overlap, so far as could be seen.

Dryotrionchis batesii. One specimen examined, No. 5602.

Major under coverts a complete row, there being fourteen on the cubitus and eleven on the manus; this 11th covert measured 24 mm. long, and the remicle only 20 mm. This row has the conforming overlap.

Median under coverts an apparently complete row on the cubitus, and two besides on the manus; these are small feathers and their overlap seemed to be *conforming*. If no mistake was made in this observation, it is very exceptional.

Lophoaëtus occipitalis. One specimen examined, not saved.

Major under coverts a complete row, with eleven on the manus, the 11th just equalling the remicle; overlap *conforming*.

Median under coverts forming a probably complete row on the cubitus and one only on the manus, besides one just at the joint; overlap *contrary*.

Astur melanoleucus. Six specimens examined, Nos. 5653, 5671, 5844, 5885 & 5899, and one other not skinned.

Major under coverts forming a complete row, fourteen or fifteen on the cubitus and eleven on the manus, the 11th always exceeding its remex. Overlap *conforming* on the cubitus and on the distal portion of the manus, but *contrary* on the proximal portion of the manus, usually about half the feathers of this row, from the carpal joint as far as the middle of the manus, having the *contrary* overlap, but sometimes more, sometimes less. The extent of the portion of the major under coverts on the manus having the *contrary* overlap varies, not only in different individual birds, but often in the two wings of the same bird; in specimen No. 5899, on one wing, about half of these coverts, from the carpal joint to the middle of the manus, have the *contrary* overlap, while in the other wing the whole of the manual major under coverts, to the tip of the wing, have the *contrary* overlap; but this condition was exceptional.

Median under coverts rather small, present on the cubitus with one feather, besides, just at the joint, or perhaps on

the manus ; no other found on the manus. From the fact that, in the last and most carefully examined specimen, some of the median under coverts seemed to be lacking also on the proximal part of the cubitus, it is possible that the row may frequently be incomplete in that portion ; these small and loose feathers are hard to find amongst the abundant down. These median under coverts have the contrary overlap, where they are large enough to overlap at all.

Astur castanilius. One specimen examined, No. 5542.

Major under coverts forming a complete row ; overlap conforming on the cubitus and on only a small portion (two or three feathers) at the tip of the manus ; contrary on the remainder (the greater portion) of the manus.

Median under coverts on the cubitus, and two on the manus ; overlap contrary, as well as could be made out.

Astur sp., probably *A. tousseneli*. One specimen examined, No. 5785.

Major under coverts forming a complete row ; overlap conforming, excepting about six feathers on the proximal portion of the manus, which, in both wings alike, have the contrary overlap.

Median under coverts present on the cubitus and one on manus ; overlap contrary.

Kaupifalco monogrammicus. One specimen examined, No. 5628.

Major under coverts a complete row, with eleven on the manus, and the 11th remex, or remicle, absent ; overlap of all conforming, so far as noted.

Median under coverts present on the cubitus and one just at the carpal joint, but none (or no other) on the manus ; overlap contrary.

Polyboroides typicus. One specimen examined, No. 5932.

Major under coverts forming a complete row, with eleven on the manus, the 11th and its remex being equal, 25 mm. long ; overlap of all conforming (this may be considered

certain, as this bird was one of the last examined, and any feathers with the contrary overlap would have been noted).

Median under coverts small and few. Only seven were found, all on the cubitus (the cubital remiges number fourteen); of these seven, the first four stand opposite, or a little distal to, the first four major under coverts, and the remaining three stand in like relation to the 6th, 7th, and 8th major coverts, leaving a gap opposite the 5th major under covert, and so just opposite the gap in the remiges. These small median under coverts do not have any overlap.

Buteo (?). One specimen examined, No. 5937.

Major under coverts complete, eleven on the manus, the 11th 30 mm. long, while its remex is 38 mm.; overlap conforming, excepting four or five feathers on the proximal portion of the manus, which have the contrary overlap.

Median under coverts present on the cubitus, larger than in most of the Accipitres examined, the row ending distally with one feather just opposite the first major under covert on the manus.

As to the Accipitres in general, it may be said that most of them diverge from the normal type in their reversed under coverts by having a greater or less number of the major under coverts on the proximal part of the manus, from the carpal joint outwards, with the contrary overlap. This was found to be the case in every one of the numerous specimens belonging to the genus *Astur*; of the specimens in which it was not found to be the case, some were examined about the beginning of this investigation, when I did not look so carefully for exceptionally placed feathers as I did later. The specimen of *Polyboroides typicus* certainly had the entire series conforming in overlap.

Syrnium nuchale. One specimen examined, No. 5905.

Major under coverts complete, eleven on the manus, the 11th equalling the remicle (24 mm. long); overlap of all conforming. This is the more certain since this bird was one of the latest examined.

Median under coverts present on the cubitus and the proximal half of the manus, the most distal one being opposite the 5th manual remex. These coverts are all rather small, and one or two at the distal end of the row are very small, with wholly downy vanes. The overlap of all is the contrary one.

Glaucidium sjöstedti. One specimen examined, No. 5770.

Major under coverts forming complete row, with twelve on the manus! there being also twelve remiges, eleven large ones and the remicle!; overlap conforming on the cubitus and distal half of the manus, contrary on the proximal half of the manus.

Median under coverts present on the cubitus and on a little more than half of the manus, numbering six or seven manual ones besides one at the carpal joint; overlap contrary.

The two specimens of Owls examined, belonging to different species and genera, differ in regard to the overlap of the major under coverts, one having them all conforming, the other having those on the proximal portion of the manus contrary, in the manner seen so frequently among the Accipitres. The two Owls agree, and differ from all the Accipitres, in the large number of median under coverts on the manus, in this respect departing less from the normal type than do the Accipitres.

The abnormal number of manual remiges and corresponding coverts in the specimen of *Glaucidium* is one of several like instances found among birds of different orders.

Psittacus erithacus. One specimen examined, not saved.

Major under coverts forming a complete row, with eleven on the manus. From the wording of the note on this point "an *extra* 11th one at the tip of the manus," it is probably intended that the remicle was wanting. Overlap of all of this row conforming.

Median under coverts present on the cubitus, but scarcely extending on to the manus, the most distal one being just at the carpal joint, a little proximal of the 1st manual major under covert; overlap of median coverts contrary.

Agapornis pullarius. Three specimens examined, two in male plumage and a female, none of them saved. (Text-fig. 7.)

Major under coverts a complete row of twelve or thirteen on the cubitus and eleven on the manus, the 11th 6 or 7 mm. long, and without any corresponding remex, or remicle.

Text-figure 7.

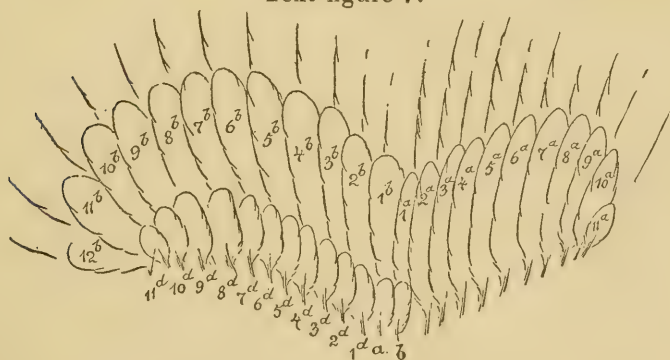


Diagram of the feathering of the underside of the wing of *Agapornis pullarius*. The remiges are only indicated.

1^a-11^a. Manual major u.w.c.

1^b-12^b. Cubital major u.w.c.

1^a. 11^a. Cubital median u.w.c.

a carpal and b manual median u.w.c.

In my notes I was sometimes inclined to call this 11th under covert the remicle, but decided, I still think rightly, to consider it a covert; the feather in question has more the appearance of the comparatively broad and soft coverts than of the remicle, which is always narrow and stiff. Overlap of all major under coverts conforming.

Median under coverts a complete row on the cubitus, and one at the carpal joint and another on the manus; these

two are marked *a* and *b*. This number was found, however, only in the bird from which the sketch was made; in the others only *a* was present. Overlap contrary. The median under coverts are small and narrow feathers, hidden by the minor coverts. An interesting note was made in the case of the female bird, of the difference of colour between the reversed and the minor under coverts, the latter being green like the general plumage of the bird, while the reversed coverts were pale blue.

Poicephalus aubryanus. Two specimens examined, Nos. 5945 & 5946.

Major under coverts forming a complete row, with eleven on the manus, and the remicle wanting; overlap conforming.

Median under coverts present on the cubitus, with one or two on the manus or at the carpal joint, the two specimens apparently differing in this respect. Median coverts with contrary overlap.

It is noticeable that in none of the six specimens of Parrots belonging to three species and as many genera, were any major under coverts found with the contrary overlap, nor any median coverts with the conforming one. Further, very little variation was found in the extent of the median row.

There was in every case an 11th under covert at the tip of the manus, but no 11th remex, or "remicle."

Caprimulgus europæus [?]. One specimen examined, No. 5650.

Major under coverts forming a complete row, with eleven on the manus, and the remicle wanting (unless this "11th under covert" is the remicle instead, as seems unlikely); overlap conforming on the cubitus and distal portion of the manus, contrary on the proximal portion of the manus.

Median under coverts present on the cubitus, with one at the carpal joint, and one besides on the manus; overlap contrary.

Caprimulgus batesi. One specimen examined, not saved.

Major under coverts exactly as in the last bird, both as regards the number and the overlap; here also the remicle was wanting.

Median under coverts present on the cubitus, with one at the carpal joint, but no other on the manus; overlap contrary.

Caprimulgus binotatus. One specimen examined, No. 5942.

Overlap of the major under coverts on the cubitus and on the distal half of the manus conforming, on the proximal half of the manus contrary.

About the median under coverts no note was made except that they were small.

Scotornis climacurus. One specimen examined, No. 5645.

Major under coverts forming a complete row, with eleven on the manus and the remicle wanting; overlap of those on the cubitus, and of the most distal four on the manus, conforming; of the remainder on the manus contrary.

Median under coverts present on the cubitus, with the most distal one just at the carpal joint; overlap contrary.

Macrodipteryx macrodipterus. One specimen examined, No. 5783.

Major under coverts forming a complete row, with eleven on the manus, if the feather described in my note-book as "a remicle resembling the major under coverts" is really a covert, as I now think; overlap conforming, with the exception of six feathers on the proximal portion of the manus, on one wing only; on the other wing the overlap of the entire row conforming.

Note the marked difference, as regards the overlap of the manual major under coverts, between the two wings of the same bird, such as was seen in one specimen of *Astur melanoleucus*.

Median under coverts present on the cubitus, with one on the manus; overlap contrary.

Himantornis haematopus *. Two specimens examined, Nos. 5559 & 5859.

Major under coverts presumably corresponding in number to the remiges; that is, ten on the manus and twelve on the cubitus. Overlap contrary excepting two or three long coverts on the cubitus near the elbow-joint, which have the conforming overlap.

Median coverts not very small, present on the cubitus with one also on the manus. As to the overlap of these, the note on the first specimen is, "distal portion contrary to the remiges, proximal portion conforming"; that on the other specimen, "overlap contrary, as well as I could tell."

Wing in both specimens eutaxic.

Limnocorax niger. Three specimens examined, No. 5752, and two others not saved. (Text-fig. 8.)

Major under coverts corresponding in number, on the manus, to the remiges, there being ten of each; but in one specimen a very minute soft feather or semi-plume was found in the position of the remicle, and also a tiny 11th under covert. Overlap in all cases contrary, on both cubitus and manus.

Row of median under coverts very incomplete, but the number present varying somewhat in the different specimens and in the two wings of the same specimen. In one specimen, on one wing five median coverts were found, three on the cubitus (the 1st, 2nd, and 7th), one at the carpal joint and one very near it on the manus, and a still smaller number on the other wing; in another specimen the numbers present were six on one wing and eight on the other, the missing ones being those at the proximal end of the row, and the one that should stand in front of and a little distal from the 5th cubital major covert; in the note on the third specimen no statement is made of the number of median coverts present, but the absence of the 5th one on the cubitus is noted, as in the other specimen, and the position

* No better place was found to put the Rails than here; but the order of arrangement is not intended to be significant.

of the remiges and under coverts on the middle portion of the wing indicated by a diagram, here reproduced:—

Text-figure 8.

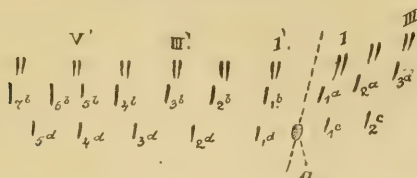


Diagram of the feather-arrangement of the underside of the wing of *Limnocorax niger*.

i-iii. Primary remiges; i'-iv'. Secondary remiges.

1^a-3^a. Manual major u.w.c.; 1^b-7^b. Cubital major u.w.c.

1^c-2^c. Manual median u.w.c.; 1^d-5^d. Cubital median u.w.c.

a. Carpal median u.w.c.

NOTE.—This diagram will serve also to illustrate the position of the median under covert at the carpal joint and the one on the manus, so often referred to in these notes. If it be taken as the rule that the median covert on the distal side of the 1st major covert and directly in front of the 1st remex is the 1st median covert, then this one at the carpal joint is the 1st on the cubitus, and there is only one on the manus; but if the median covert on the proximal side of the 1st major covert be considered the 1st, then the one at the joint belongs to the manus, and there are two on the manus.

Sarothrura sp. No. 5639.

Major under coverts a complete row with probably ten on the manus (the number of manual remiges is noted as ten only); overlap contrary.

Median under coverts present on the cubitus, with one on the manus, or at the joint; overlap contrary. The median coverts are inserted very close to the major, so that the two rows are a little hard to separate; but the median coverts are much shorter than the others.

A remarkable fact about the two rows of reversed under coverts of this bird is that, though the wing is diastataxic as regards the upper coverts, with an extra one between the 4th and 5th cubital remiges, it is eutaxic as regards these under coverts, since they correspond exactly to the remiges—the major series as well as the median.

Sarothrura bonapartei. One specimen, No. 5958.

Major under coverts a complete row with undoubtedly only ten on the manus (only ten remiges were found); overlap of most contrary, but some at either end of the row, near the elbow and near the tip of the wing, apparently conforming in overlap.

Median under coverts present on the cubitus, with a small one at the joint or on the manus; overlap contrary, unless some of the coverts near the elbow have the conforming overlap, like the major coverts.

The wings of this bird also are eutaxic as regards the under coverts, though diastataxic as regards the upper ones.

Podica jacobi. One specimen, No. 5685.

Major under coverts a complete row, with probably eleven on the manus, and only ten remiges. (The note made at the time was thus expressed, "A remicle with white bar and white tip like the under coverts.") Overlap of these coverts on the manus contrary, on the cubitus apparently also contrary, but so interrupted by feathers in the moult that it could not be certainly made out.

Median under coverts present on the cubitus and one at the joint, or on the manus; overlap not made out.

Podica camerunensis. One specimen, No. 5943.

Major under coverts a complete row, but number on the manus not observed, though the presence of a remicle 9 mm. long is noted on each wing. Overlap contrary on the manus and distal third of the cubitus, conforming on the proximal two-thirds of the cubitus.

Median under coverts present on the cubitus, and one at the joint, or on the manus; overlap of all on the left wing, and of most on the right contrary, but that of some on the cubitus of the right wing conforming.

The wing in this bird was eutaxic.

The Rails (including *Podica*) are unique among the birds investigated in that, in every case, the whole or the greater part of the major under coverts have the contrary overlap.

The two rows of reversed coverts in the Rails are inserted close together, and have the same overlap.

Guttera plumifera. Six specimens examined, Nos. 5567, 5568, 5569, 5617, 5666 & 5667.

Major under coverts large, forming a complete row; the number on the manus undoubtedly ten, as an 11th would have been noted if found; overlap of the whole row, in all cases, conforming.

Median under coverts very small, not equalling the minor coverts which are themselves small; found only on the cubitus, or, in one case, on the cubitus with one at the joint and one on the manus besides. These coverts are so narrow and far apart as, in some cases, to have no overlap; but where the overlap could be made out, it was also conforming, like that of the major coverts.

Francolinus squamatus. Two specimens examined, not saved.

Major under coverts a complete row, about ten on the manus, and twelve on the cubitus; overlap conforming.

Median under coverts small, but not so small as in *Guttera*, present on the cubitus with one at the carpal joint; overlap contrary. An interesting fact noted about these small median coverts, in one of these *Francolinus*, is that they have aftershafts.

Francolinus lathamii. Three specimens examined, No. 5794, and two others which were not saved.

Major under coverts a complete row, ten on the manus. The overlap of these, in the first, and also in the last specimen examined, was found to be conforming throughout; in the other specimen all these coverts had the conforming overlap excepting three on the proximal end of the manus, in both wings alike, which had the contrary overlap.

Median under coverts in two specimens (they were inadvertently overlooked in the other) small, but not extremely small; present on the cubitus, with one at the

wrist joint, and another on the manus noted in one specimen. The overlap of these coverts in No. 5794 was found to be contrary, while in the last specimen examined it is stated to be undoubtedly conforming.

Though the birds of this group chance to come next after the Rails in this account, the characters of the reversed under coverts are widely different in the two groups. While in the Rails all or the most of these coverts, of both rows, assume the contrary overlap, in the Game-Birds the major coverts all, or in one case nearly all, have the conforming overlap, and there is even a strong tendency to the conforming overlap in the median coverts, a thing found in no other birds.

The great variability of the overlap of the median coverts in two of the three species here named is to be accounted for, perhaps, by the small size of these feathers, giving little margin for overlapping and allowing them to conform sometimes to the larger major coverts behind them.

The strong tendency to reduction in size of the median coverts in this group of birds is carried further in that which follows, so that the juxtaposition in this case is natural.

Corythæola cristata. Five specimens examined, none skinned.

Major under coverts a complete row, ten on the manus and fourteen on the cubitus; overlap of all conforming.

Median under coverts entirely wanting. The presence is noted in three of the specimens of some small feathers or semiplumes, which from their situation were at first thought to be rudimentary median under coverts; but upon closer examination they were found to have aftershafts on the side next the remiges, and hence could not belong to the reversed coverts.

Turacus persa. Four specimens examined, No. 5555, and three others not skinned.

Major under coverts a complete row, undoubtedly ten on the manus (the manual remiges number ten only); overlap of all conforming.

Median under coverts wanting. The same kind of very small feathers standing where a row of median coverts would be looked for, was found in this species as in the last, and here also they were proved to be minor coverts by the position of the aftershaft.

Turacus meriani. One specimen examined, No. 5560.

Major under coverts a complete row; overlap conforming.

Median under coverts none.

Centropus monachus. Two specimens examined, No. 5545 and another not saved.

Major under coverts complete, numbering ten on the manus and ten or eleven on the cubitus. The cubital portion of the row in both specimens, and in one specimen two or three coverts at the distal end of the manus, had the conforming overlap; the remaining coverts on the manus in the one specimen, and all on the manus, so far as noted, in the other, had the contrary overlap.

Median under coverts wanting.

Centropus anelli. Two specimens examined, Nos. 5577 & 5816.

Major under coverts a complete row, ten on the manus. The overlap of these, in No. 5816, was found to be conforming on the cubitus and distal part (about half) of the manus, and contrary on the proximal half of the manus; in the note on No. 5577 it is stated that the overlap was conforming only on the distal third of the manus, and contrary on the proximal two-thirds of the manus and also on the cubitus. That all the coverts of this row on the cubitus should have the contrary overlap is so improbable that I think it likely that only some of them on the distal end of the cubitus, next the contrary ones on the manus, were contrary in their overlap, as is the case in some Cuculidæ mentioned below, and that seeing some of them so arranged, I hastily concluded that all were so.

Median under coverts none.

Ceuthmochares aëreus. Three specimens examined, none of them saved.

Major under coverts, undoubtedly only ten on the manus (manual remiges only ten); overlap conforming on the cubitus and on the distal portion of the manus (sometimes more, and sometimes less than half), contrary on the proximal portion of the manus. In the last specimen examined it was noted that a few of these coverts on the distal end of the cubitus had the same contrary overlap as those adjacent to them on the manus.

No median under coverts.

Cuculus gabonensis. Four specimens examined, Nos. 5525, 5525, 5775 & 5803.

Major under coverts complete, undoubtedly ten on the manus; overlap conforming on the cubitus and distal end, sometimes only a small portion, of the manus, contrary on the remainder of the manus. In regard to the overlap in this species also, the first specimen examined seems to have been exceptional, in that it was found to have all the coverts of this row on the manus contrary; it is possible that two or three of the most distal ones may have been conforming, and the fact overlooked.

No median under coverts.

Cuculus solitarius. Two specimens examined, not saved.

Major under coverts complete, probably ten on the manus; conforming on the cubitus and on the distal third of the manus, contrary on the proximal two-thirds of the manus in the later specimen examined. In the first specimen of this species, which was one of the very first birds examined, all these coverts were thought to have the conforming overlap; probably some with the contrary overlap were overlooked.

Median under coverts none.

Cuculus [?]. No. 5931.

Major under coverts complete, doubtless ten on the manus (there were only ten manual remiges); overlap conforming

on the cubitus and distal two-thirds of the manus, contrary on the proximal third of the manus.

Median under coverts none.

Cercococcyx mechowi. One specimen examined, No. 5676.

Major under coverts complete ; overlap conforming on the cubitus and distal part, about half, of the manus, contrary on the proximal half of the manus.

Median under coverts none.

Pachycoccyx validus. One specimen examined, No. 5939.

Major under coverts complete, doubtless only ten on manus (there were only ten manual remiges) ; overlap conforming on the cubitus and distal half of the manus, contrary on the proximal half of the manus.

Median under coverts none.

Chrysococcyx cupreus. Five specimens, Nos. 5588, 5625 & 5877, and two which were not skinned.

Major under coverts complete, undoubtedly ten on the manus (manual remiges ten). As to the overlap of these, it is conforming on the cubitus, or at least the greater part of it, though sometimes some of these coverts on the distal end of the cubitus were found to be contrary like the adjoining ones on the manus ; it is generally conforming on the tip or distal part of the manus, and contrary on the proximal part, or sometimes the whole, of the manus.

Median under coverts none.

Chrysococcyx klaasi. Four specimens examined, Nos. 5883 & 5901, and two not skinned.

Major under coverts complete. They have the conforming overlap on the cubitus, excepting sometimes a few at the distal end ; and the conforming overlap, generally, on the distal part of the manus, and the contrary overlap on the proximal part, or in one specimen the whole, of the manus, with sometimes a few adjacent coverts on the cubitus.

Median under coverts none.

Chrysococcyx flavigularis. Three specimens examined, all in immature plumage, Nos. 5660, 5683 & 5878.

Major under coverts complete, ten on the manus (manual remiges also only ten), and nine on the cubitus; overlap conforming on the cubital and distal portion of the manus, contrary on the other part of the manus.

Median under coverts none.

Chrysococcyx smaragdineus. Eight specimens examined, Nos. 5611, 5642, 5670, 5882, 5889, 5911, 5913, and one not saved.

Major under coverts a complete row, numbering ten on the manus (remiges also only ten), and about ten on the cubitus. They are conforming on the cubitus except sometimes near the carpal joint; and on the distal part, sometimes more, sometimes less than half, of the manus; and contrary in overlap in the part of the row between, whether on the proximal part of the manus only, or on this with some adjacent feathers on the cubitus.

Median under coverts none.

In the large number of specimens examined, belonging to twelve species, of the Cuculidæ, there was never any trace of a second or median row of reversed under coverts; in this they agree with the Musophagidæ. But while in the last-named family the single row of reversed coverts always has the conforming overlap in its whole length, in the Cuculidæ there are generally two changes, and always at least one, in the manner of overlapping, between the base and the tip of the wing; the conforming overlap being found on the proximal portion or the whole of the cubitus, and generally also on the distal portion of the manus, while the feathers forming a continuous section of the middle portion of the row lying either wholly on the manus or on that and the adjacent part of the cubitus have the contrary overlap.

Vinago calva. Four specimens examined, none of them saved.

Major under coverts a complete row, ten (?) on the manus, and about twelve on the cubitus. Wing diastataxic. Those

on the cubitus are small feathers with downy edges, and are hidden by the larger median coverts. As to the overlap in this row, it is conforming on the cubitus, these small coverts having their distal vanes, which are almost wholly downy, covered not only by the edges of the adjoining coverts, but also by those of the remiges as well, so that they stand, each one sandwiched between the vanes of two remiges; on the manus the overlap is contrary excepting three or four coverts at the tip of the wing, which are conforming.

Median under coverts present on the cubitus, with one also at the carpal joint; overlap conforming. As these are larger than the major coverts on the cubitus, and have the same overlap as the major coverts on the manus, they appear to form a continuous row with the manual major coverts.

Turturana iriditorques. Two specimens examined, Nos. 5846 & 5862.

Major under coverts complete (wing diastataxic), those on the cubitus small; overlap on the cubitus conforming, on the proximal part of the manus (half or less) contrary; on the distal part of the manus (half or more) conforming.

Median under coverts large, present on the cubitus, with one besides at the carpal joint, and still another (which was wanting, however, in one wing) on the manus; overlap contrary.

Calopelia puella. Two specimens examined, not saved.

Major under coverts complete, only ten on the manus (in one specimen there were found only ten manual remiges, in the other a very small 11th was found); on the cubitus the same number, twelve or thirteen, as the remiges, the wing being eutaxic. The coverts of this row on the cubitus are smaller than the median coverts. Overlap of major coverts conforming on the cubitus, contrary on the proximal part (half or less), conforming on the distal part (half or more) of the manus.

Median under coverts large, present on the cubitus, with one besides at the carpal joint; overlap contrary.

Tympanistria tympanistria. Three specimens examined, none saved. (Text-fig. 9.)

Major under coverts complete, ten on the manus, and on the cubitus the same number as the remiges, for the wing is eutaxic; these coverts on the cubitus small, with broad downy fringes at the edges, especially the distal edges. Overlap conforming on the cubitus; while on the manus, in the more carefully examined specimens, about half of

Text-figure 9.

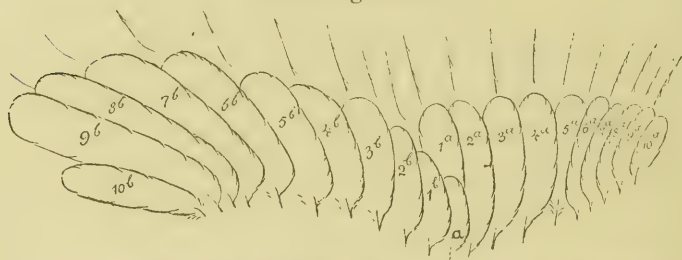


Diagram of the under wing-coverts of *Tympanistria tympanistria* with the remiges only indicated.

1^a-10^a. Manual major u.w.c.

1^b-10^b. Cubital median u.w.c. which conceal the cubital major u.w.c.

a. Carpal median u.w.c.

these coverts on the proximal part of the manus were found to have the contrary overlap, and the other (distal) half the conforming one.

Median under coverts large, becoming near the elbow joint more than half as long as the remiges; present on the cubitus with one besides at the carpal joint; overlap contrary.

Chalcopelia afra. One specimen examined, not saved.

Major under coverts complete, ten in number on the manus, the 11th remex having no corresponding covert (? or remiges ten, and major under coverts eleven), thirteen on the cubitus, and wing eutaxic. Overlap conforming except on the proximal half of the manus, where it is contrary. These coverts are small on the cubitus, larger on the manus.

Median under coverts large, present on the cubitus, with one besides at the carpal joint on the manus; overlap contrary.

In all the Doves examined the portion of the complete or major row of reversed under coverts lying on the proximal part of the manus was found to have the contrary overlap, as in so many other groups of birds. These under coverts differing in manner of overlapping from the others on the hand, were noticed by Sundevall in *Columba*. But he had laid down the rule that the feathers of "the second series" (median under coverts) "lie with the margins in the opposite direction to the former" (*i. e.* have the contrary overlap). This rule he considered so invariable that "when either of the two series is deficient, we can recognize by the position of the margins which it is that remains." Following this rule with *Columba*, he says that in this bird the first series (major coverts) is interrupted on the hand, their place being taken by the second series (median coverts). Against this view, that the feathers with contrary overlap are really median coverts filling a supposed gap in the row of major coverts, it may be argued:—(1) changes of overlap in the midst of either series of under coverts are frequent, in many different birds,—the overlap of each series is not uniform and invariable; (2) the feathers in question, on the proximal part of the manus, cannot be median coverts because there is one real median covert,—the feather marked "a" in the figure of *Tympanistria*—(two were found in *Turturæna*) in front of them, not in the same row with them. (See remark under *Ardea goliath*.)

The characteristic in which the reversed under coverts of Doves differ from those of the birds preceding them in this paper (but not from those following them) is the reduction in size of the major under coverts on the cubitus and the counterbalancing increase in size of the cubital median coverts, so that the latter become the principal under coverts of that part of the wing.

Apaloderma narina. Four specimens examined, No. 5663, and three others not saved. (Text-fig. 10.)

Major under coverts ten on the manus, and about nine or ten small ones on the cubitus, or else not so many, with one or two near the elbow lacking; wing eutaxic. These coverts on the cubitus are so small as to be hidden from view by the median coverts measuring 12-15 mm. in length, and

Text-figure 10.

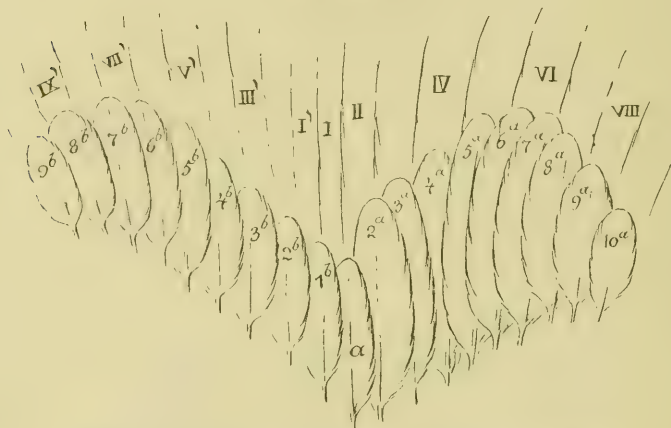


Diagram of the under wing-coverts of *Apaloderma narina*.

i-viii. Primaries; i'-ix'. Secondaries.

2^a-10^a. Manual major u.w.c.

1^b-9^b. Cubital median u.w.c.

a. Carpal median u.w.c.

The small cubital major and 1st manual major u.w.c. are concealed by the other larger feathers.

are soft and white; they have the conforming overlap, or rather each is wholly covered by the proximal edge of the next remex. The first major covert on the manus is also a small and hidden feather like those on the cubitus. The other major under coverts on the manus are large, and have the conforming overlap on half or more of this section of the wing, but the contrary overlap on the half or less, next the carpal joint.

Median under coverts present on the cubitus with one at the carpal joint; overlap contrary. These are not large, and the absence of visible major coverts behind them leaves the remiges bare for most of their length.

Eurystomus gularis. Four specimens examined, Nos. 5764, 5772, 5944 & 5950.

Major under coverts complete, if we include the rudimentary ones on the cubitus, which are scarcely more than down-feathers, though they have distinct shafts; eleven on the manus, the 11th being present even when, as in some of the specimens, the remicle was not found, and larger than the remicle when that was present. Wing diastataxic. The manual major coverts conforming in overlap excepting on the proximal portion (half or less) of the manus, where the overlap is contrary.

Median under coverts present on the cubitus, with one at the carpal joint; overlap contrary.

Ceryle maxima. Two specimens examined, Nos. 5626 & 5959.

Major under coverts present on the manus, number not noted (remiges eleven), but on the cubitus reduced to rudimentary feathers 20 mm. long, with slender shafts and weak downy barbs. Wing diastataxic, there being two of the rudimentary under coverts, as well as two of the large upper ones, between the 4th and 5th cubital remiges. Overlap of the manual major coverts conforming on half or more of the hand, but contrary on the proximal part (half or less). The major under coverts are coloured like the remiges.

Median under coverts present on the cubitus, with one at the carpal joint; overlap contrary. These are red like the minor coverts, and are so small as to be almost or quite hidden by them.

In this bird the reversed under coverts on the proximal part of the manus, though they have the same overlap as the median coverts next to them on the cubitus, do not

even appear to form a continuous series with them, being quite different in colour and size. This was not the case in the Trogon and the Broad-mouthed Roller described just before, for there the major coverts on the proximal part of the manus and the median ones next to them on the cubitus might easily be thought, from their appearance, to form one series.

Ispidina leucogaster. Two specimens examined, Nos. 5529 & 5583. (Text-fig. 11.)

Major under coverts present on the manus, ten in number; on the cubitus they are reduced to mere down-feathers, in

Text-figure 11.

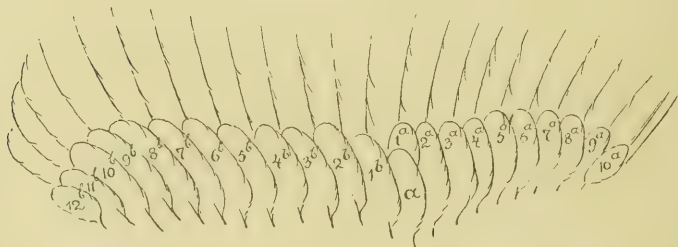


Diagram of the under wing-coverts of *Ispidina leucogaster*, the remiges only indicated.

1^a–10^a. Manual major u.w.c.

1^b–12^b. Cubital median u.w.c.

a. Carpal median u.w.c.

The cubital major u.w.c. are rudimentary and concealed behind the other feathers.

one bird without even shafts, in the other with slender shafts. Wings eutaxic. Overlap on the manus contrary, excepting, in the more carefully examined specimen, some on the distal or tip end, numbering five on one wing and only one on the other (the one shown in the figure), which are conforming.

Median under coverts present on the cubitus with one at the carpal joint; overlap contrary.

Ispidina picta. One specimen examined, not saved.

Major under coverts present on the manus, doubtless ten in number (remiges ten only); none whatever on the cubitus, not even rudiments. Overlap on the manus contrary, with the exception of two or three conforming ones at the tip. Wing eutaxic.

Median under coverts present on the cubitus, with one at the carpal joint; overlap contrary.

Myioceyx lecontei. One specimen examined, No. 5921.

Major under coverts present on the manus, doubtless only ten; on the cubitus represented by small down-feathers, so situated in the intervals between the remiges that each is closer to a remex on its proximal than on its distal side, thus differing from the usual position of major under coverts. Overlap on the manus contrary, with the exception of three to five conforming feathers at the tip.

Median under coverts present on the cubitus, with one at the carpal joint; overlap contrary.

Halcyon malimbicus. One specimen (immature) examined, not saved.

Major under coverts present on the manus; represented on the cubitus by rudimentary feathers, which, however, are not mere down-feathers, and have slender shafts. Overlap on the manus contrary on the proximal portion, conforming on the distal portion (about half).

Median under coverts present on the cubitus, with one at the carpal joint; overlap contrary.

Halcyon badius. Two specimens examined, No. 5906, and another not saved.

Major under coverts present on the manus, but represented on the cubitus by rudimentary feathers with slender shafts, or, in one of the specimens, by mere small down-feathers. Wing eutaxic. The manual major under coverts have the conforming overlap on the distal half, or more

than half, of the hand, the contrary one on the proximal half or less.

Median under coverts present on the cubitus, with one at the carpal joint ; overlap contrary.

In at least the smaller Kingfishers the reversed under coverts have the appearance, at first sight, of forming one continuous series on the two sections of the wing. That they do not really do so, is proved in the first place, by the extra one always found at the carpal joint, which is the continuation of the cubital series a little way past the end of the manual one, showing the former to be the median coverts ; and in the second place, by the rudimentary major under coverts on the cubitus, sometimes large enough to be evidently the real continuation of the manual series, though sometimes they are mere small downfeathers and sometimes even quite absent.

Melittophagus mülleri. Three specimens examined, Nos. 5523, 5533 & 5766.

Major under coverts present on the manus, ten in number ; none on the cubitus, not even in a rudimentary condition. Overlap on the proximal portion (half or less) of the hand contrary, on the remainder half or more, conforming.

Median under coverts present on the cubitus, with one at the carpal joint noted in the last specimen, No. 5766—not noted in the others ; overlap contrary.

Melittophagus australis. Two specimens examined, Nos. 5562 & 5823.

Major under coverts present on the manus, none on the cubitus ; but in specimen No. 5823, on one wing only, a single small downy rudimentary feather near the first cubital remex seems to be a remnant of this series on the cubitus. Overlap on the proximal portion of the manus contrary, on the distal portion conforming.

Median under coverts present on the cubitus, with one at the carpal joint noted in the last specimen—not noted in the other ; overlap contrary.

Scoptelus brunneiceps. One specimen examined, a male in immature plumage, No. 5879.

Major under coverts entirely wanting.

Median under coverts present on the cubitus only, where they form with the minor coverts a single row of about sixteen feathers very close together, with one continuous overlap (the contrary one). The reversed and the minor coverts of the single row can be distinguished only by noting that every alternate feather is turned face towards the remiges, while the remainder are reversed.

Bycanistes albotibialis. One specimen examined, not saved.

Apparently no reversed under coverts whatever. There is a row of well-developed minor coverts extending the whole length of the wing, and behind these and hidden by them, on the cubitus, two rows of small downy feathers with stiff and peculiarly flattened shafts, the two rows so close together as to form a single numerous row with continuous contrary overlap. These were found to have the more convex and glossy side of the rhachis turned from the remiges, and were thought therefore to be minor coverts. It is possible that a closer examination might have shown the alternate ones to be reversed, as was afterwards found in the specimen of *Scoptelus* (see above).

Bycanistes sharpei. One specimen examined, No. 5623.

Probably no reversed under coverts. This specimen had behind the fully-developed minor under coverts on the cubitus some small feathers which were mostly in moult, and those not in moult were too small for me to determine whether they were reversed or not.

Lophoceros fasciatus. One specimen examined, not saved.

No reversed under coverts that were certainly known to be such. Two small feathers standing close to the 11th and 12th cubital remiges, near the elbow, seemed to be reversed, but I could not be sure. A row of minor under coverts somewhat resembling the peculiar small ones noted in the

large Hornbills above was found in this bird also, but they were not so markedly different from the other minor coverts.

Lophoceros camurus. Two specimens examined, Nos. 5900 & 5908.

No reversed under coverts, or only rudimentary ones. In one specimen five, in the other two, small downy feathers were found on the proximal end of the cubitus, that seemed, from their situation, to be reduced reversed coverts; but it could not be determined which side was the front and which the back of any of them. The minor under coverts also small and downy.

Lophoceros hartlaubi. One specimen examined, No. 5807.

No reversed under coverts that could be known to be such. All under coverts very small.

Ortholophus cassini. Two specimens examined, No. 5590, and another not saved.

No reversed coverts that could be determined to be such. Two rows of small coverts were found on the cubitus with downy vanes and peculiar broad flattened shafts, each row with the feathers closer together than the remiges, and the two rows very close to each other. No certain difference could be seen between the two sides of these little feathers, the shafts being perfectly flat, without convexity or groove—or perhaps the side away from the remiges was slightly convex. This fact, if it was such, and also the crowded situation of these little feathers, such that they did not correspond to the remiges, seemed to show them to be minor coverts.

In the Hornbills, reversed under coverts seem to be either entirely wanting, or reduced to rudimentary feathers. Further study with a microscope would doubtless make it possible to determine the homology of the small and peculiar under coverts that were found. The greatly reduced under wing-coverts form but one feature of the general sparse or reduced pterylosis of the Hornbills.

Lybius bidentatus. Four specimens examined, No. 5635, and three others not saved.

Reversed under coverts forming one continuous row on both parts of the wing, without anything in their appearance or situation to show that they belong to different series, there being no extra one at the carpal joint; they number about twelve on the cubitus, and I think ten on the manus, as an under covert of the remicle would have been noted if one had been present. Overlap of these coverts contrary on the cubitus and the adjacent part of the manus, conforming on the remainder, from half to three-quarters, of the manus.

Tricholema flavipunctatum. One specimen examined, No. 5902.

Reversed under coverts one continuous row with no extra one at the carpus; overlap contrary excepting on the distal half of the manus, where it is conforming.

Gymnobucco peli. One specimen examined, not saved.

Reversed under coverts one continuous row with no extra one at the carpus, numbering ten on the manus and about twelve on the cubitus; overlap of those on the cubitus and the next two on the manus contrary, of the remainder on the manus conforming.

Buccanodon duchaillui. Three specimens examined, No. 5549, and two others not saved.

Reversed under coverts one continuous row with no extra one at the carpus, numbering doubtless ten on the manus, and about twelve on the cubitus; these latter and the next ones on the manus contrary in overlap, the remainder, varying in number from eight to five, of those on the manus conforming.

Barbatula stellata. Three specimens examined, not saved.

Reversed under coverts one continuous row with no extra one at the carpus (unless overlooked); overlap contrary excepting the distal half of the manus, where it is conforming.

Barbatula leucolaima (six specimens) and *B. subsulphurea* (five specimens).

Reversed under coverts one continuous row, with no extra one at the carpus noted—certainly none in some cases; number on the manus ten, on the cubitus about ten; overlap contrary, excepting on a varying fraction, usually half or more, of the manual part of the series at the distal end, where it is conforming.

Barbatula erythronota. Seven specimens examined, Nos. 5644, 5824, 5841, 5909, 5929, 5930 & 5936.

Reversed coverts present on the cubitus and on the manus, without anything, in most cases, to show that the two portions of the single row belong morphologically to different series; but in No. 5824 an extra reversed under covert at the carpal joint was found on both wings, and again in No. 5929 such an extra one was found on one wing only. This extra covert is in front of, and smaller than, the 1st covert on the manus, like that marked *a* in the figure (p. 560) of the Kingfisher (*Ispidina leucogaster*), and it seems to be an indication that the cubital reversed coverts in the Barbets, as in the Kingfishers, are really the median coverts which, though generally confined to the cubitus, occasionally extend distally by one more feather, thus continuing the row a little past the end of the major coverts on the manus. Overlap of these cubital or median coverts contrary, as is also that of the proximal end (half or generally less than half) of the manual or major coverts; of the remaining major coverts, on the distal half, or more, of the manus conforming.

Trachylæmus purpuratus. Two specimens examined, not saved.

Reversed under coverts forming an apparently continuous row, with ten on the manus and ten or eleven on the cubitus; no extra one noted. Overlap contrary, excepting those on the distal portion, half or more, of the manus, which are conforming.

Though in the Barbets there is found only a single apparently continuous row of reversed coverts and the rudi-

mentary major under coverts found on the Kingfishers and Bee-eaters have quite disappeared, and the extra carpal reversed covert, or most distal median covert, has in most cases disappeared also; yet the occasional presence of this feather, as well as the analogy of the Kingfishers, shows that the cubital portion of the single row consists of median coverts, and the manual portion of the major coverts.

Indicator exilis. One specimen examined, No. 5880.

Reversed under coverts one continuous row on cubitus and manus, with no extra one at the carpus; number on the manus undoubtedly nine only, as only nine manual remiges were found. Overlap of these under coverts contrary, excepting a few on the distal end of the manus, which are conforming.

With regard to the point of junction of the manual and the cubital reversed under coverts, a more exact note was made on this specimen than on most. The position of the 1st cubital under covert is in front and rather to the distal side of the base of the first cubital remex (and so also of all the series on the cubitus), thus making two coverts in the interval between the bases of the 1st manual and the 1st cubital remiges, although neither is in front of the other as with the extra covert at the carpus frequently noted. Though, unfortunately, notes on this point were not made in other cases, it is probable that this position of each cubital under covert rather to the distal side of its remex is the universal one in this and allied birds, and if so this is an additional indication that these are the median and not the major coverts. The position of each manual reversed covert on the proximal side of its remex is likewise an indication that the manual ones are the major coverts.

[Note the positions, where both series of reversed coverts are present, in diagram under *Pteronetta hartlaubi*, p. 535.]

Prodotiscus insignis. One specimen examined, No. 5768.

Reversed under coverts one continuous row, with contrary overlap excepting the distal half of the manus, where the overlap is conforming.

Melignomon zenkeri. One specimen examined, No. 5566.

Reversed under coverts one continuous row, numbering undoubtedly only nine on the manus, as there were only nine functional manual remiges, the 10th being only 4 mm. long; overlap of these under coverts contrary, excepting the most distal three on the manus, which were conforming.

Melichneustes robustus. One specimen examined, No. 5576.

Reversed under coverts one continuous row, numbering nine only on the manus (and functional remiges also only nine, the 10th being only 4 mm. long); overlap of reversed under coverts contrary, excepting the most distal three on the manus, which were conforming.

Iynx. No. 5624.

Reversed under coverts one continuous row; those on the cubitus and the next two on the manus with the contrary overlap, the remainder on the manus with the conforming overlap.

Verreauxia africana. Five specimens examined, Nos. 5652, 5917, and three others not saved.

Reversed under coverts one continuous row, numbering ten on the manus and nine or ten on the cubitus; no extra one present at the carpus (but in the first specimen no note was made on this point); overlap contrary on the cubitus and on half or more of the manus, conforming on the distal half, or less, of the manus.

Dendromus caroli. Six specimens examined, No. 5920, and five others not saved.

D. nivosus. One specimen examined, not saved.

D. permistus. One specimen examined, No. 5791.

Reversed under coverts one continuous row, numbering ten on the manus and about the same number on the cubitus; no extra one noted at the carpus; overlap contrary on the cubitus and adjacent portion—often only a small portion—of the manus, conforming on the remainder.

Mesopicus ellioti. Four specimens examined, Nos. 5541, 5640, 5884, 5907.

M. xantholophus. Two specimens examined, Nos. 5887, 5903.

Reversed under coverts one continuous row, numbering ten on the manus and about ten on the cubitus; no extra one noted at the carpal joint; overlap contrary on the cubitus and adjacent portion of the manus, conforming on the remaining portion—half to one-third or three-quarters—of the manus.

Dendropicus gabonensis. One specimen, No. 5627.

D. lafresnayi. Three specimens, Nos. 5536, 5881, and another not saved.

In these four specimens the reversed under coverts may be described in identical terms with the other Woodpeckers above; in the one specimen of *D. gabonensis* the distal portion of the series, having the conforming overlap, comprised nearly all of these coverts on the manus on one wing and scarcely half on the other wing.

Though in the Woodpeckers the reversed under coverts always form but a single series, apparently continuous on the two parts of the wing, without even the extra median covert at the carpal joint, yet analogy drawn from the preceding groups leads us to consider the series as made up of the remnant of two series, the coverts on the manus being the major, while those on the cubitus are the median coverts. There seems to be a small but pretty constant difference separating the Woodpeckers from the Barbets and Honey-Guides, in regard to the place of the change of overlap on the manus; in Woodpeckers at least half of the manual reversed coverts are conforming (the only exception being found in some specimens of *Verreauxia*), while in the other groups named often only a small portion at the distal end is conforming.

Colius nigricollis. Seven specimens examined, No. 5869, and six others not saved.

Reversed under coverts one continuous row, numbering

ten on the manus and eight or nine on the cubitus; overlap on the cubitus and the adjacent part of the manus contrary, on the rest of the hand conforming. The proportion of these coverts on the manus with the conforming overlap varies greatly, being often about half but sometimes much less, and on one wing of one bird none at all; while sometimes it is more than half, and in one specimen apparently all these coverts were conforming.

Tachornis parvus. Seven specimens examined, No. 5763, and six others not saved.

Reversed under coverts large, in one continuous row, of ten on the manus and about eight on the cubitus. Wing eutaxic. In my notes I have recorded the presence of a remicle or 11th manual remex, having no corresponding under covert, and it is possible to consider this little terminal feather as really an 11th under covert, as was certainly the case in some birds having no remicle. Overlap of all reversed under coverts conforming.

Chaetura sharpei. Two specimens examined, Nos. 5786 & 5843.

Reversed under coverts forming one continuous row, numbering ten on the manus and about seven on the cubitus, with a small one besides at the carpal joint, in front of the row of the others. Wing eutaxic. Here again the presence of a remicle was noted, with the additional words, in one case, "resembling the major under coverts," and possibly this is to be considered as an 11th reversed under covert on the manus. Overlap of all reversed coverts conforming.

This group (the Swifts) seems to be out of its place, with regard to the morphology of the reversed under coverts, when put here next to the Coraciiform birds. For if we consider the single series of these coverts to be made up of the major coverts on the hand and the median ones on the fore-arm, as in the preceding groups, then we have median coverts with the conforming overlap and cubital major coverts absent, which is improbable. Besides, the smaller extra

reversed feather at the wrist-joint, found in the two examples of *Chatura*, is not placed in line with either portion of the main series, and does not appear to be a continuation of the coverts on the cubitus, like the similar small feather noted in some Kingfishers, etc. ; but it appears to be rather the single remaining feather of an obsolete row of median coverts. So we must consider the whole series of reversed coverts in the Swifts to be the major coverts, as in the Cuckoos.

The Passeriformes.—Now all the birds examined with regard to their reversed under coverts have been reviewed, excepting the Passeriformes. The large number of these examined (over four hundred examples belonging to 134 species) makes it necessary here to use a more concise method of treatment than with the other orders, and give first the general characters and afterwards particular modifications. This is, moreover, easy to do with the Passeriformes, on account of the great uniformity in their reversed under coverts, and the slight nature of such modifications as occur.

First, then, is given a general description that applies to all the Passeriform birds examined, without exception, and will not be repeated:—

Major under coverts present on the manus, ten in number, or often less, but never more ; not present on the cubitus as full-sized or functional coverts, but often found as small or rudimentary feathers, as in some of the Kingfishers. These rudimentary major under coverts in Passeriform birds are often larger at the distal end of the cubitus, next to the manus, and the first manual major under covert is often reduced in size ; so that there is a gradual transition from the full-sized ones on the manus to the rudimentary ones on the cubitus. The major under coverts are more closely joined to the remiges in this order than in any other birds. The overlap is always conforming throughout the series.

Median under coverts present on the cubitus, with an extra one at the carpal joint, making the number of the full series ten ; but one or two may be wanting at the proximal

end of the row—never at the distal end. They always have the contrary overlap.

The modifications now to be described, in the reversed under coverts of Passeriform birds, have to do exclusively with the greater or less reduction of the different parts of the major series.

Smithornis. Twelve examples, belonging to three species, examined. (Text-fig. 12.)

Major under coverts on the manus ten in number, but the first, next the carpal joint, generally reduced in size, sometimes so much reduced as to be a mere rudiment. Rudimentary major under coverts present in every case, on the

Text-fig. 12.

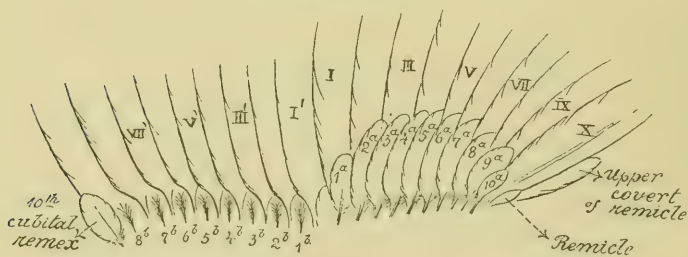


Diagram of the under wing-coverts of *Smithornis* with the median series removed.

i-x. Primaries; i'-vii', etc. Secondaries.

1^a-10^a. Manual major u.w.c.

1^b-8^b. Rudimentary cubital major u.w.c.

cubitus, usually very small and downy, but sometimes those on the distal part large enough to have distinctly visible shafts.

Hirundo and *Psolidoprocne*. Thirteen examples, belonging to four species, examined.

Major coverts on the manus nine, the 10th, at the wing-tip, wanting (10th remex very small); the 1st, by the carpal joint, generally reduced in size. Rudimentary major under coverts present in every case on the cubitus.

Parisoma, *Muscicapa*, *Alseonax*, *Artomyias*, *Pedilorhynchus*,
Hyliota, *Bias*, *Platysteira*, *Diaphorophya*, *Erythrocercus*,
Elminia, *Trochocercus*, *Tchitrea*, *Chloropeta*, *Stizorhina*.

Seventy specimens, of 22 species, examined.

Major under coverts on the manus ten, the 1st sometimes reduced in size. Rudimentary major under coverts present on the cubitus, in most cases; but wanting, or only a few present, in the three specimens of *Elminia longicauda*; wanting in the two specimens of *Erythrocercus macalli*; wanting, or only a few present, in the six specimens of *Trochocercus nitens* (but the whole series present in all the five specimens of *Trochocercus nigromitratus*).

Campephaga quiscalina. Six specimens examined.

Major under coverts on the manus ten, the 1st sometimes reduced in size; rudimentary major under coverts always present on the cubitus.

Sigmodus rufiventris. Six specimens examined.

Major under coverts on the manus ten, the 1st small, as noted in one case, and probably so in others; rudimentary major under coverts present on the cubitus in every case, sometimes large and partly pennaceous, those next the carpal joint forming a transition to the full-sized coverts on the manus.

Nicator chloris and *N. vireo*. Seven specimens examined.

Major under coverts on the manus ten, all of the full size—at least generally; major under coverts on the cubitus entirely wanting in every case.

Pomatorhynchus, *Laniarius*, *Chlorophoneus*, *Dryoscopus*,
Chaunonotus, *Malaconotus*. Twenty-eight specimens,
of nine species, examined.

Major under coverts on the manus ten, usually all of the full size, but sometimes the first reduced; rudimentary major under coverts present on the cubitus in the greater number of cases, but wanting in *Pomatorhynchus* and *Malaconotus* (only one specimen of each examined) and wanting,

or only a few present, in some specimens of *Laniarius* and *Dryoscopus*.

Lanius mackinmoni. Two specimens examined.

Major under coverts on the manus ten ; rudimentary major under coverts present on the cubitus.

Dicrurus. Two specimens, belonging to two species, examined.

Major under coverts on the manus ten ; rudimentary major under coverts present on the cubitus.

Oriolus lætior. Two specimens examined.

Exactly as above, under *Lanius* and *Dicrurus*.

Lamprocolius, *Onychognathus*, *Pæoptera* Eight specimens, belonging to four species, examined.

Major under coverts on the manus ten ; rudimentary major under coverts present on the cubitus in every case, sometimes comparatively large ; in one specimen of *Lamprocolius splendidus* there were perfect feathers 13 mm. long, resembling the major under coverts on the manus except in size, and in having a little more downy margin or fringe on the vanes.

Parus funereus. Three specimens examined.

Major under coverts on the manus ten ; the 1st reduced in one specimen. Rudimentary major under coverts present on the cubitus, in one of the specimens large, and not differing greatly from the coverts of the same series on the manus, being only narrower and a little shorter, with somewhat looser vanes.

Malimbus, *Ploceus*, *Amblyospiza*, *Pyromelana*. Forty-nine specimens, of fifteen species, examined.

Major under coverts on the manus ten, the 1st very often reduced in size ; rudimentary major under coverts on the cubitus always present, though in some cases not all of them present.

Vidua serena. Four specimens examined.

Major under coverts on the manus nine, the 10th wanting; the 1st more or less reduced in size but present in all cases. Rudimentary major under coverts on the cubitus wanting, or only the first or most distal one present.

Spermospiza, *Pyrenestes*, *Spermestes*, *Nigrita*, *Estrilda*.

Sixteen specimens, belonging to nine species, examined.

Major under coverts nine or eight, the 1st, next the carpal joint, being always absent, and the 10th, or most distal one, absent also in all of the smaller birds of this group—present only in *Spermospiza guttata* and *Pyrenestes ostrinus*, which are larger birds than the others. Rudimentary major under coverts on the cubitus always wanting. Thus it is seen that in the smaller Weaver-birds the major under coverts have undergone a further reduction than in any birds hitherto noticed.

Parmoptila woodhousei. Five specimens examined.

Major under coverts nine or eight, the 1st, or the 1st and 10th, being absent. Rudimentary major under coverts on the cubitus wanting.

Serinus punctigula. Seven specimens examined.

Major under coverts on the manus nine, the 10th wanting, the 1st reduced in size. Rudimentary major under coverts on the cubitus all present in one specimen, several of them present in another, only the first or most distal one present in a third, quite absent in the remaining four specimens.

Budytes flava. Three specimens examined.

Major under coverts on the manus nine, the 10th wanting; rudimentary major under coverts on the cubitus present in all the specimens.

Criniger, *Bleda*, *Phyllostrephus*, *Andropadus*, *Pycnonotus*,
Ixonotus. Forty-six specimens, of fifteen species, examined.

Major under coverts on the manus ten, except in one specimen of *Andropadus virens*, which had only nine, the 1st

being absent; in some of the others the 1st was reduced in size. The presence or absence of the rudimentary major under coverts on the cubitus was found to vary among the members of this group, and even among individuals of some of the species: in *Criniger* they were always present; in *Bleda tricolor*, always absent; in *Phyllostrephus* and *Andropadus* there were generally none, or only one or two, found; in *Ixonotus guttatus* none, or only a few; in *Pycnonotus gabonensis* these rudimentary coverts were in some cases all present, in some a few only, and in some none. Where only a few were found, they were situated near one or the other of the extremities of the cubitus, those most frequently present in the partial series being the 1st, the 7th, and the 8th.

Turdinus. Eight specimens, belonging to three species, examined.

Major under coverts on the manus ten, except in one specimen, where the 1st was wanting; rudimentary under coverts either only a few present, or entirely wanting; where only a few were found, these were oftenest near the proximal end of the cubitus, or, sometimes, the most distal one of these rudimentary coverts (the 1st).

Callene, Alethe. Seven specimens, of three species, examined.

Major under coverts on the manus ten, the 1st sometimes reduced; rudimentary major under coverts on the cubitus present in every case.

Phylloscopus trochilus, *P. sibilatrix*, and *Sylvia*. Seven specimens examined.

Major under coverts on the manus ten, the 1st sometimes reduced in size; rudimentary major under coverts on the cubitus present in every case.

Cisticola, *Bathmedonia*, *Burnesia*, *Prinia*, *Calamocichla*, *Bradypterus*. Twenty-eight specimens, of nine species, examined.

Major under coverts on the manus ten, in *Calamocichla* and

Bradypterus (which contain the largest birds among the genera of this group), and in a few specimens belonging to the other genera; in most specimens of the other genera (comprising small birds), nine only, the first wanting. The first major under covert on the manus, when present, usually smaller than those following it. Rudimentary major under coverts on the cubitus wanting, except in one specimen of *Calamocichla rufescens*, where they were not only present but rather large.

Apalis, *Euprinodes*, *Eremomela*, *Camaroptera*, *Macrosphenus*, *Sylvietta*. Thirty-eight specimens, of nine species, examined.

Major under coverts usually nine, the 1st wanting, though in a few cases the first was present, and small or rudimentary, or even present and full-sized; most of the examples in which the first major under covert was found to be present belonged to *Sylvietta virens*. Rudimentary major under coverts on the cubitus wanting in every case.

Zosterops stenocricota. Four specimens examined.

Major under coverts nine, the 1st being present, but the 10th, at the tip of the wing, absent (and the 10th remex only 4 or 5 mm. long); the 1st major under covert, in one case, very small. Rudimentary major under coverts on the cubitus wanting.

Hylia prasina. Two specimens examined.

Major under coverts nine, the 1st wanting, or rudimentary. No rudimentary major under coverts on the cubitus.

Pholidornis rushiæ. Four specimens examined.

Major under coverts nine, the 1st wanting. No rudimentary major under coverts on the cubitus.

Anthreptes and *Cinnyris*. Thirty-seven specimens, of thirteen species, examined.

Major under coverts either all ten present but the 1st small or rudimentary, or only nine present, the first one absent. In several cases the first covert was entirely absent on one wing of the bird, but present and rudimentary on the other.

Rudimentary major under coverts usually absent on the cubitus, and when present, only a few were found, and those always at the proximal end next the elbow-joint.

Conclusions.

The account of the detailed examination of reversed under wing-coverts having now been finished, it remains to consider how far the several modifications discovered can be seen to be derived from each other and from a primitive type—in other words, to consider their bearing on a phylogenetic classification of birds. This is too difficult a matter to be gone into very extensively here; but enough may be said to show its importance and induce future study.

The most primitive type of reversed under coverts found in the birds examined is undoubtedly the one described first, as the normal type found in some birds that cannot all be considered as closely related to each other—the Ducks, Scissor-bills, Plovers, and Sandpipers,—in which there is a complete series of major, and a long series of median coverts, the former all with conforming, the latter all with contrary overlap. This most primitive type found, however, may fairly be supposed to be derived from one still more primitive, existing in the remote ancestry of birds, before the large flight-feathers became much differentiated from the ordinary covering feathers, in which both the series that have now become the reversed under coverts had the same uniform (conforming) overlap as the other rows that became the remiges and the large upper coverts, and both extended completely to the tip of the wing. The great development of the large flight-feathers would cause a reduction and partial disappearance of the less important of the two rows in question, the median under coverts, at the narrowest part of the wing, the tip. In no bird examined were the median under coverts found to extend much beyond half-way on the manus.

The assumption of the contrary overlap by the median coverts was the next step, and may be accounted for by a consideration of the way in which they best fulfil their office

of coverts. The function of coverts to the remiges is to close the insterstices between the quills and prevent the air from passing through, so causing leakage and loss of force in the wing-stroke in flying. This is accomplished more perfectly by two continuous rows of feathers overlapped in the opposite ways, than by two overlapped in the same way, since any accidental opening or separation, allowing air to pass, between two feathers in the one row, would tend to be continued in the same direction in the other row, were it overlapped in the same way; but would tend to be stopped in the other row, were it overlapped in the contrary way. Thus it is essential to the best performance of their office that the feathers of these two rows be overlapped in opposite ways; accordingly such a condition is found in all birds that make constant use of their wings in flight. In the Rails, both rows have the contrary overlap and are almost mixed together in one row; in the Fowls, the small and almost functionless median under coverts were often found to have the conforming overlap: but birds of these groups fly comparatively little.

The next step or modification, leading further away from the primitive type, is the assumption of the contrary overlap by some of the major under coverts—generally those on the proximal part of the hand. This is very common among birds of many, or most, orders, and in some orders it is universal. It takes place, it will be noticed, on the central part of the wing where the resistance of the air in the wing-stroke is great, and at or near the place where the median coverts cease. Thus it is evidently to be accounted for in much the same way as is the contrary overlap of the median coverts, by the greater efficiency as coverts of feathers with the overlap in the opposite way to the remiges. That the contrary overlap in the major under coverts is not carried on out to the tip of the wing may be accounted for by the fact that on the narrow part of the wing near the tip the feathers are crowded so that the under coverts become sandwiched in between the remiges, and must necessarily have the conforming overlap. Thus the overlap of the

manual major under coverts is controlled by two opposite tendencies, that towards efficiency, and that towards conformity with the remiges resulting from crowding, the latter tendency acting most strongly near the tip of the wing. Hence the place of the change of overlap on the manus is indefinite, and great variation appears even among individuals of the same species, and sometimes between the two wings of one bird.

Conformity with the remiges as the result of crowded situation is evidently the explanation of the universally conforming overlap in the manual major under coverts of Passeriform birds; for here the crowding is carried to the greatest extreme, the major under coverts being set close against the quills of the remiges, and no room is left for them to take the contrary overlap. In regard to the less degree of efficiency of these under coverts in Passeriform birds, which we should hardly expect to find in view of the high power of flight among them, it may be noted that in this order of birds the coverts in general are of less size and importance as compared with the remiges than in other orders, and efficiency has been secured through the broad and well-knit vanes of the remiges, the coverts being, as it were, neglected.

As intimated above, it seems significant that the major under coverts so often begin to assume the contrary overlap near the place where the median coverts cease—about the carpal joint,—as if it were essential that there should be everywhere one row overlapped in the way contrary to the remiges. According to this, we should expect that in birds having only the major series, the overlap would tend to become contrary. The Plantain-eaters have only the major under coverts, and they are always conforming; but Plantain-eaters are not birds that make great and constant use of their wings in flight. Cuckoos, that fly more, have likewise only the major under coverts, and these have the contrary overlap, in many cases, not only on the manus but on the cubitus also. It is significant that among Accipitrine birds, all the numerous specimens examined of

the genus *Astur* had some of the major under coverts with the contrary overlap, while *Polyboroides* had all of these coverts conforming; for the more primitive *Polyboroides* has, for a Bird-of-Prey, a slow and laboured flight, while the small African Goshawks are the last thought in swift and skilful movement on the wing.

Further steps in the modification of the reversed under coverts from the primitive type are found in the reduction or disappearance of one or other of the two rows, in part or in whole; for the tendency of the evolution seems to be toward the neglect and loss of these feathers, in the process of perfecting the remiges. That the median series is incomplete on the manus in all the birds examined, and in the majority is reduced to one or two feathers, or none, on this part of the wing, has already been noticed. The median coverts have become very small in some groups, even on the cubitus, and in some entirely disappear.

Bearing in mind these two tendencies in the evolution of the wing, in respect to the reversed under coverts—that to reduction and that to the assumption of the contrary overlap,—we may arrange groups of birds in series showing the different stages. Thus, the Game-birds have the median coverts very small and of little use; in the Plantain-eaters they have quite disappeared; in the Cuckoos, not only have the median coverts disappeared, but the major coverts show a strong tendency to take their place functionally by assuming their contrary overlap. In this series it is the median coverts that are reduced, and disappear; another may be arranged in which that process is exemplified in the cubital major under coverts. The Doves have small cubital major under coverts, quite hidden by the median row; the same condition was found in the one species of Trogon examined; the Kingfishers show a still further reduction of these cubital major under coverts, and in some species (birds of small size) a total disappearance of them; the Bee-eaters retain only occasional vestiges of them; in the Barbets and Woodpeckers not even such vestiges were found. The Passeriform birds show all stages of reduction and

disappearance of the cubital major under coverts, but so irregularly that no series of families or genera can be formed, since great variation is found within genera and even species, some individuals having the rudimentary major under coverts quite large, while others of the same species have them very small or even absent. Yet in the Swallows these rudimentary coverts were always present, and also in some small groups of which but few representatives were seen; and in the small African "Warblers" related to *Cisticola*, and in the Sunbirds, they were nearly always wanting.

How far phylogenetic relationship may be inferred from such series of groups of birds as those given above is a difficult question. Of course it is quite impossible to suppose such relationship between some of the groups placed together in the above series, as between Doves and Coraciiform birds. But this fact does not destroy the force of the evidence of the reversed under coverts in favour of relationship in other cases. That the characters derived from these coverts cannot be used in all cases with logical precision is merely what must be admitted of all characters used in classification whatever. Furthermore, where so much uniformity of type is found in the reversed under coverts in undoubted large groups of birds, a departure from this uniformity is a real ground for doubt about the inclusion of some groups in the larger groups in which they have been sometimes placed. The Owls and the Nightjars, for instance, have the reversed under coverts little modified from the primitive or "normal" type, and not showing the slightest tendency towards the very peculiar and characteristic type seen in the Picarian birds (Kingfisher-Woodpecker group). So also the Parrots, with the two rows of these coverts well developed, show no tendency towards the type found in Plantain-eaters and Cuckoos, in which the median coverts have disappeared, though the Fowls, with their much reduced median coverts, do show such a tendency. It may be added that the reversed under coverts of the Swifts, in the few examples seen, do not appear derivable from the type found in the Kingfisher-Woodpecker group—or from any other special type observed.

But the study of the reversed under coverts will have to be carried much further before conclusions bearing on the classification of birds can be safely derived therefrom.

In conclusion, the author of this paper is glad to acknowledge the encouragement, advice, and help received from Mr. W. R. Ogilvie-Grant in the putting together of the records of his observations in a form for publication. The observations themselves were made quite independently and alone, the idea of making them having been derived from reading Mr. Pycraft's paper referred to in the introduction, and afterwards that of Sundevall.

XXIX.—*Notes on recently described Races of Siamese and Malayan Birds, with a Description of one new Race.*

By HERBERT C. ROBINSON, M.B.O.U., and C. BODEN KLOSS, M.B.O.U.

WITHIN the last few months a considerable number of races of Malayan and Siamese birds have been described in various periodicals, English and Foreign, by E. C. Stuart Baker, Count Nyls Gyldenstolpe, Dr. E. Hartert, H. Oberholser, and Lord Rothschild.

As the collections of birds from these regions that are either embodied in the collection of the Federated Malay States Museums, and collected by us, or have passed through our hands, are very large indeed, while in some instances the races are actually founded on duplicates from our collections, some remarks on certain of these species may possibly be of interest.

In the first place, it may not be amiss to observe that in some cases a certain laxity is apparent in the quotation of precise type-localities, though this, of course, is not entirely to be laid to the door of the describer. Localities which are quite familiar to the original collector, who in many cases may have collected entirely for his own edification, and which may even be readily traceable by local residents, are very frequently not to be found in any map at

the disposal of a home zoologist, who is therefore forced to cite, sometimes erroneously, the names of mere hamlets not found on any other than a large-scale topographical map and probably applying to several different places. In some instances, through this cause, the ascribed locality is totally erroneous.

In the case of races from the kingdom of Siam this procedure is peculiarly undesirable and misleading, as Siam is not a distinct zoological province, the fauna of the peninsular portion of it being purely Malayan, while that of the north is almost identical with that of the Shan States and that of the central area with Tenasserim.

Another practice that is becoming increasingly common is the omission of precise differential characters. A race is often described as larger or smaller than that with which it is compared, and dimensions are, of course, usually given. But the dimensions of the compared form are almost invariably omitted.

It is rare, moreover, for the describer to state of what number of specimens his series consists and with how many specimens of the allied form he has compared it. These details, in the present days of minute differentiation, are important as enabling other workers, to whom the type-series is not available, to judge of the degree of distinctness of the proposed new form.

We are all strong on "standardization" nowadays, and it would be well if ornithologists would imitate the methods of some of their co-workers in mammals and minutely specify all the details to which we have alluded.

+ *Eupetes macrocerus griseiventris*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 8.

This race, founded on three specimens from "Tang, Song Paa, Siam," *lege* Tung Song Paa, peninsular Siam, cannot possibly be maintained. "Paa" is merely Siamese for jungle, and the place in question is a railway junction in the state of Nakon Sritamarat, about Lat. 8° N.

We have four specimens from Kao Nong, a mountain on the borders of the provinces of Bandon and Nakon Sritamarat, about 40 miles N.N.E. of Tung Song, collected between 1200'–1500', between 18 and 24 June, 1913.

Of these one is a nestling having the under surface uniform dull slatish; two are very immature with earthy-brown heads and the chestnut ochraceous feathers of the breast only just appearing, and the fourth is an adult female.

This is absolutely identical with two of the same sex from Cheras, near Kuala Lumpur, Selangor, collected in October 1908, and from Kuala Teku, Tahan River, Pahang, August 1905; so Mr. Stuart Baker's type must have been slightly immature.

All these specimens and many others from Selangor are identical with a male from Sandarong Agong, Korinchi, western Sumatra, 2450 feet, collected on 2 July, 1914, and this can be regarded as a topotype of the species which was described from Padang. Wings of eight adults from the Malay Peninsula range from 93 to 98 mm., males being apparently slightly larger. The Sumatra male measures 99 mm.

+ *Corythocichla brevicaudata herberti*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 10.

Corythocichla leucosticta Sharpe; Robinson, Journ. Fed. Malay States, 1914, p. 104.

This subspecies, also from the same locality as the preceding, has no existence in fact.

The actual type passed through our hands, and we have before us six birds, collected within a radius of 40 miles of Tung Song, which we have compared with thirty-six others from various parts of the Federated Malay States, including four exact topotypes.

While it is true that extreme specimens from each of these series present considerable differences *inter se*, any one from either series can be matched by one from the other.

Some specimens have the entire flanks dingy greyish, while others are strongly ochraceous fulvous. All have the wing in the neighbourhood of 60 mm., and there is much variation in the white tips to the secondaries and their coverts.

It is unfortunate that Mr. Stuart Baker has apparently compared his form with races from the north with which he is more familiar rather than with *C. b. leucosticta* Sharpe, which is the nearest geographical race. Had he done so on sufficient series, we are convinced that he would have refrained from describing it.

Personally, we consider that, excluding *Corythocichla crassa* (*Lanioturdinus*) from Borneo, which is fairly distinct, all the described races of this genus are no more than geographical forms of the oldest named form, viz., *C. brevicaudata* (Blyth). *Corythocichla* can, in our opinion, be conveniently retained as a distinct genus and not united with *Turdinulus*, as has been done by Hartert and Harington.

† *Stachyridopsis rufifrons obscura*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 10.

This race is of even more doubtful value than the preceding. We have examined the types (*vide* Herbert, Journ. Nat. Hist. Soc. Siam, ii. 1916, p. 58) and compared them with specimens of the true *S. r. poliogaster*, with which they agreed, being exactly matched by a male collected at Ginting Bidei, Selangor, 2300', on 10 May, 1909 (F. M. S. Mus., No. 1304/09). The form is wide spread, though everywhere extremely rare, and no separation should be attempted except on very much larger series than are at present available, in view of the known liability to change of tint in all Timeliine birds from age of skin after death.

The original type of *S. r. poliogaster* was from Gunong Pulai, Johore. We possess specimens from Selangor and Perak in the Malay Peninsula, and from Korinchi in western Sumatra; while it has also been recorded from central Borneo.

+ *Stachyris leucotis goodsoni*.

Hartert, Bull. B. O. C. xxxvi. 1915, p. 7.

A female from Paku, Saribas, Sarawak, dated November, and a male, dated March, differ from a large series from the Malay Peninsula in the points stated by Hartert, viz., a darker slaty crown and in the darker tips to the wing-coverts, the first character having been already noted by Dr. Sharpe (Cat. Birds Brit. Mus. vii. 1883, p. 537). In addition, our specimens have the lores more tinged with buffy than any of the Malay Peninsula series.

+ *Stachyris poliocephala diluta*, subsp. nov.

Differs from the typical *S. p. poliocephala* from Sumatra (two specimens from Deli tua, north-eastern Sumatra, compared) in being lighter below, the ferruginous of the breast and belly less saturate; the chin and throat less blackish grey; the cheeks and ear-coverts slightly paler grey.

Wing 65 mm., against 68 in the Sumatran birds; mean of ten Malayan birds 66.2, of four Bornean birds 67.0 mm.

Type.—Adult female, collected at Taiping, Perak, Federated Malay States, on 4 November, 1914.

Specimens examined.—Twenty-four from the Malay Peninsula, from Perlis to Selangor and Pahang; and four from Sarawak, Borneo, which for the present we associate with this form.

Remarks.—In addition to the diagnostic characters above stated, the Borneo-Malayan form shows a tendency to be somewhat paler in the mantle and back, but this feature is not constant.

+ *Stachyris maculatus pectoralis*.

Timalia pectoralis Blyth, Journ. Asiat. Soc. Bengal, xi. 1842, p. 793: Malacca.

Comparison of eleven specimens from Sarawak with fifteen from the Malay Peninsula (Upper Perak to Malacca) shows that the latter differ in being generally darker beneath, the flanks strongly washed with fulvous grey, the white edges to the feathers of the belly less pure.

The type-locality of *Timalia maculatus*, Temm. Pl. Col. 593, fig. 1, 1836, is quoted as Borneo and Sumatra, and we here restrict it to Borneo.

† *Erythrocichla bicolor whiteheadi*.

Hartert, Bull. B. O. C. xxxvi. 1915, p. 36.

Two females from Anyut Paku, Saribas, south-western Sumatra, and a series of twenty from all parts of the Malay Peninsula, from Trang to Pahang, confirms Dr. Hartert's diagnosis as to the duller forehead of the Bornean bird. One specimen, however, a male from Gurun, near Kedah Peak, central Malay Peninsula, approaches the Bornean birds very closely indeed in this respect.

† *Macronus ptilosus reclusus*.

Hartert, Bull. B. O. C. xxxvi. 1915, p. 36.

Six specimens from various parts of Sarawak maintain the distinctness of this race in having no slaty-grey patch in the middle of the abdomen, and in having the crown of the head of a brighter rufous than in the Malayan and Sumatran bird. In addition, the Bornean birds have a marked light fulvescent patch on the fore-neck, which is only present to a very minor extent in our Malayan series of over twenty specimens.

† *Xanthiscus flavesceus vivida*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 16.

We have never met with this form in any part of the Malay Peninsula (where it is stated to be found by its describer) south of the Isthmus of Kra, nor are we aware of any record of its occurrence within this area.

† *Iole virescens cinnamomeoventris*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 16.

Four specimens, two males and two females, from Chong, Trang, peninsular Siam, collected in December 1909 by ourselves, agree well with the diagnosis of this race, and have the wings—82, 83, 81, 79 mm.

Stuart Baker records the range of this form as extending to the extreme south of the Malay Peninsula, but in this he is not correct; birds from the south of the latitude of Trang are all to be referred to the typical *Iole olivacea* Blyth, Journ. Asiatic Soc. Bengal, xiii. 1842, p. 386, which differs in being much browner, less greenish olive, with the throat greyish white, and the belly tinged with sulphur-yellow; axillaries with no tinge of buff; under tail-coverts dull brown with paler edges; bill larger and wing 86–90 mm. in birds from the Malay Peninsula, 85 mm. in a female from eastern Sumatra.

All these forms stand in subspecific relationship to each other, the meeting-place of *Iole olivacea olivacea* and *Iole olivacea virescens* being about in the State of Trang, whence we have also a female of the former race, wing 87 mm.

A female from Meetan, Mt. Mooleyit, north Tenasserim, measures 81.5 in wing, and appears to agree with the north Siamese bird described as *Criniger lonnbergi* Gyldenstolpe, Kongl. Sv. Vet.-Akad. Handl. l. No. 8, p. 24, pl. i. fig. 1.

The forms therefore are:—

1. *I. olivacea olivacea* Blyth: Sumatra, Borneo, Java, British portion of Malay Peninsula.
2. *I. olivacea cinnamomeoventris*: Peninsular Siam to Tenasserim.
3. *I. olivacea lonnbergi*: Central Tenasserim and north Siam.
4. *I. olivacea virescens*: Aracan, central and southern Burma.

† *Pomatorhinus olivaceus siamensis*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 9.

This race from Maprit, south-western Siam, should certainly have been compared with that described as *Pomatorhinus schisticeps fastidiosus*, Hartert, Bull. B. O. C. xxxvi. 1916, p. 81, from Trang and Bandon, peninsular Siam, less than 200 miles distant.

We have seven specimens from Kao Nong, Bandon, and three from various places in Trang, peninsular Siam, which we have compared with two specimens from Me Wang,

northern Siam, and Doi Nga Chang, Lampang, northern Siam, 4500', which we owe to the kindness of Mr. Williamson, and which we regard as representative of *P. o. ripponi* Harington (Bull. B. O. C. xxvii. 1910, p. 9) of the Shan States.

These differ from *P. o. fastidiosus* in being generally lighter above without a markedly greyish-black cap, the patches in the sides of the neck more ochraceous orange, less chestnut, and more diffused into the nape. Tail decidedly less dark, especially at the base.

These are the characters which are stated to characterize *P. o. siamensis*, which must therefore be suppressed.

+ *Cyanoderma erythropterus sordida*.

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 10.

We possess a large series of this subspecies from all parts of the peninsula from Bandon in peninsular Siam to Gunong Angsi in Negri Sembilan.

Those from Bandon and Trang, within 150 miles of Maprit, the type-locality of *C. e. sordida*, are certainly quite inseparable from the most southern specimens. It is undoubtedly the case that the black of the throat, and indeed the whole plumage, fades with considerable rapidity in the skin, as is the case with a very large number of Timeline birds. Mr. Stuart Baker has evidently been misled by freshly collected skins, and his subspecies cannot be maintained. Freshly collected birds from Pulau Tioman present the same differences.

+ *Tchitreia paradisi borneensis*.

Hartert, Bull. B. O. C. xxxvi. 1916, p. 75.

We have in our collection four adult males of this race with the tail fully developed. The tails of all greatly exceed those of any specimen of *T. p. affinis* in our collection, but do not attain the length of 459 mm. given for the type, the largest being 375 mm. The bills are certainly markedly larger than those of the vast majority of *T. p. affinis*, though one specimen from Trang, peninsular Siam, is as large as any of the Bornean birds in this respect.

The colour of the shaft-stripe of the central tail-feathers is not constant; two of the Borneau birds agree with those from the Malay Peninsula in having the terminal part white tipped with black at the extreme tip, while a few Malayan specimens have the shaft-stripe black throughout.

We are unable to appreciate any alleged differences in the colour of the feathers of the head.

While dealing with these species we have worked through the very large series of the genus in our collection, and find that three forms are represented, viz.: (1) *Tchitrea princeps* (Temm.), a rare winter visitor, of which we possess an adult male from the vicinity of Taiping, dated 31 October, and a female from Ginting Bidei, near Kuala Lumpur, shot in April. (2) *Tchitrea paradisi affinis* (Blyth), apparently resident throughout the year; and (3) *Tchitrea paradisi incii* Gould, only found from October to April.

The last two forms are amongst the most difficult of birds satisfactorily to discriminate, but adults in white plumage appear to differ by the much stronger median black shaft-stripes in back, mantle, and tail in *T. p. incii*. Young birds and females of *T. incii* appear to acquire very early a black throat, sharply defined from the breast, which is not present in our fifty specimens of *T. p. affinis*.

† *Gerygone griseus*.

Gyldenstolpe, Ornith. Monatsb. 1916, p. 27 : id. Kongl. Sv. Vet.-Akad. Handl. lvi. No. 2, 1916, p. 78, pl. ii. fig. 2.

Count Gyldenstolpe has established this species on a single specimen from Koh Lak in peninsular Siam, and states that it differs from *G. modiglianii* Salvad., from Sumatra and the Malay Peninsula, in lacking the dusky horseshoe mark on the sides of the fore neck.

We have before us seven specimens from various parts of the Malay Peninsula and one from western Sumatra.

One of the former is from Pulau Panjang Anak, a small island near Junk Zeylon on the west side of the Peninsula, not far distant from Koh Lak.

This has the lateral horseshoe mark quite perceptible. The character is one that is easily obscured in the make-up of the skin, and I do not think it is possible to admit the existence of two forms of this bird in the Malay Peninsula. The Pulau Panjang bird has darker lores than those from Taiping and Bagan Datch in Perak, but is otherwise identical. Gyldenstolpe's figure is not satisfactory, the yellow of the under surface being too pale, while the black subterminal band to the tail is unduly emphasized.

† *Anthreptes hypogrammica intensior*.

Hartert, Bull. B. O. C. xxxviii. 1917, p. 27.

We have compared a pair from Saribas, Sarawak, with over forty specimens from all parts of the Malay Peninsula, and can just perceive the differences stated by Dr. Hartert, viz., a darker upper surface and yellow richer edges to the feathers of the throat, breast, and belly, especially the latter, in the Bornean birds. The differences are, however, very slight, and we doubt if it would be possible to discriminate with certainty unlabelled birds from the two localities.

The bird seems rare in Sumatra; we did not obtain it there in 1914, nor is it represented in large collections since received from Padang and Banca on the west coast, and from Deli district in north-eastern Sumatra. It was not obtained by Kloss in Padang, or by Buxton and Forbes in the Lampongs and Banca, though there is, I think, little doubt that it actually occurs in the island.

† *Melanoperdix nigra borneensis*.

Rothschild, Bull. B. O. C. xxxviii. 1917, p. 3.

We cannot detect the very slightest difference between a male from Betong Seribas, Sarawak, collected in August 1916, and four males from the low country of Selangor and Negri Sembilan. Our Bornean bird presents not the slightest greenish tinge as stated in Lord Rothschild's description of the type. We have no female Bornean birds for comparison and have not seen Sumatran birds.

XXX.—*A reply to Messrs. Robinson and Kloss, with some further critical remarks by* E. C. STUART BAKER, M.B.O.U.

UNDER the title "Notes on recently described Races of Siamese and Malayan Birds" Messrs. Robinson and Kloss have written some criticisms to which I feel a reply is necessary, in so far as they concern certain races which have been described as new by myself and by the authors of the criticisms. As regards the remarks made anent the laxity of certain authors in reference to localities, the making of types, and full information on various points no one can take objection, but we may all hope that Messrs. Robinson and Kloss having realized the importance of these features will, in future, practise with the same wisdom as that with which they preach.

† *Eupetes macrocerus griseiventris.*

Stuart Baker, Bull. B. O. C. xxxviii. 1917, p. 8.

It is said that this race cannot be maintained because it is founded on three specimens only from Siam, and this assertion is made on the examination of *one* adult specimen only from the same country. Messrs. Robinson and Kloss admit that this is the case, so perhaps it is unnecessary for me to say more; but it may be as well to record the fact that the three Siamese specimens in Mr. Herbert's collection examined by me are all fully adult fine skins, and they show well the differences as given by me in comparison with a very large number, over forty specimens, from elsewhere.

+ *Corythocichla brevicaudata herberti.*

Stuart Baker, loc. cit. p. 10.

Messrs. Robinson and Kloss are perfectly right, and my name becomes only a synonym of *C. b. leucosticta*—a very regrettable oversight on my part.

✓ *Stachyridopsis rufifrons obscura.*

Stuart Baker, loc. cit. p. 10.

I cannot agree with Messrs. Robinson and Kloss's conclusions in regard to this subspecies. The birds described

by me are quite different from true *S. r. poliogaster*, and their bright, but pale, fulvous breasts alone suffice to distinguish them at a glance from that bird. *S. r. poliogaster*, of which there is a very big series of skins in the British Museum, even when very old and faded, is still much darker and more rufous above than is my new subspecies.

† ***Pomatorhinus olivaceus siamensis*.**

Stuart Baker, loc. cit. p. 10.

I have compared Mr. Herbert's specimens of this subspecies with the types of Herbert's *fastidiosus*, and they certainly do not seem to be the same. *P. o. siamensis* is a much redder bird than *P. o. fastidiosus*, with more and richer red on the sides of the neck and flanks. With more material the two forms may be found to run into one another, and, if so, my name must be suppressed and become a synonym of *fastidiosus*. For the present they must both be retained.

† ***Cyanoderma erythropterum sordida*.**

Stuart Baker, loc. cit. p. 10.

I find that I must also maintain this subspecies, and I cannot agree that all birds, both from the Peninsula and islands, are the same. It appears to me that northern birds are distinctly darker than southern, though specimens from Java and Sumatra seem to be one and the same. The skins in the British Museum do not appear to have faded, and doubtless they are not affected so much by age as they are in a tropical climate. Some of the oldest skins in the huge series in the British Museum are the darkest of all.

The type-locality for *C. erythropterum erythropterum* is Singapore.

† ***Setaria rufifrons*.**

Setaria lepidcephala (Gray); Kloss, Ibis, 1918, p. 203.

Cabanis's description of *rufifrons* is as follows:—"Upper side olive-brown, tail rusty red, underside whitish, the scale-like feathers of the forehead and anterior crown light ferruginous and with paler shaft-stripes and blackish tips. Length $6\frac{1}{4}$ " ; bill $\frac{3}{4}$ " ; wing 3" ; tail $2\frac{1}{2}$ ".

The wing, it will be noticed, is only 76.2 mm. and not 80 mm. as given by Finsch. Description and size therefore agree well with the bird hitherto accepted as *Setaria rufifrons*, and this name must stand. Mr. Kloss was, of course, misled by Finsch's description.

† *Mixornis rubricapilla sulphurea*.

Kloss, Ibis, 1918, p. 204.

Rippon's type of *Stachyridopsis sulphurea* is *Mixornis rubricapilla* pure and simple. Under any circumstances the specific name will be *sumatrana*, that being the oldest now that *gularis* cannot stand, and this is indeed pointed out very correctly by Kloss.

I cannot myself distinguish Siamese birds from *rubricapilla*, but if they are to be separated, Gyldenstolpe's name, *minor* (Kongl. Sv. Vet.-Akad. Handl. lvi. 1916, No. 2, p. 60), must stand.

† *Chloropsis aurifrons inornatus*.

Kloss, Ibis, 1918, p. 198.

Mr. Herbert's specimens confirm Mr. Kloss's diagnosis of his new form.

† *Pycnonotus blanfordi robinsoni*.

Grant, Fasc. Mal. Zool. iii. 1905, p. 85.

I cannot distinguish between *P. b. blanfordi* and *P. b. robinsoni* as I find it possible to get a good series of the typical *blanfordi* from the extreme south, and, *vice versa*, an equally good series of the so-called *P. b. robinsoni* from northern Burma.

† *Prinia inornata blanfordi*.

Kloss, Ibis, 1918, p. 211.

Mr. Kloss has made the same mistake as I did when naming some birds collected by Mr. Williamson. His specimens, like Mr. Williamson's, are, of course, my new subspecies *P. i. herberti*.

† *Chalcoparia singalensis koratensis*.

Kloss, Ibis, 1918, p. 218.

I cannot confidently confirm Mr. Kloss's diagnosis of this new subspecies. Mr. Herbert's fine series of sixteen specimens agreed so well with Mr. Kloss's description that when I first examined them I, without hesitation, put them down under his name. Later on I again examined those and the Museum specimens, and I find that the apparent differences are mostly the result of make-up of the skins. Tenasserim birds, again, do not appear to be different from others.

Kloss points out Oates's mistake in his description of the young bird. As the former shows, the young bird differs in having no rufous on the throat as well as in other minor particulars.

Buchanga atra longus.

Kloss, Ibis, 1918, p. 227.

Buchanga leucophæa.

Id., ibid.

Dissemurus paradiseus paradiseus.

Dissemurus paradiseus malayensis (Jerdon); Kloss, Ibis, 1918, pp. 228-229.

I have dealt with these Dicteridæ at length in a recent article in 'Novitates Zoologicæ' and need not comment further here.

† *Graucalus macei macei*.

Kloss, Ibis, 1918, p. 192.

This should be my *G. m. siamensis*. The Siamese bird differs from the Indian in that the female has a unicoloured throat and upper breast instead of being barred on these parts.

† *Volvocivora koratensis*.

Kloss, Ibis, 1918, p. 193.

This is nothing but Hume's *intermedia*. A specimen obtained by Mr. Herbert at Pakjong is very pale with pure white under tail-coverts and a wing of 121 mm. It agrees exactly with some specimens in the British

Museum named *intermedia* by Hume, some of which have pure white under tail-coverts, whilst some have them white with greyish bases.

† *Volvocivora polioptera*.

Kloss, Ibis, 1918, p. 194.

Kloss has revived the name *polioptera* Sharpe, on the grounds that three birds obtained by him at Koh Lak show that Sharpe's original diagnosis was correct and that *polioptera* is a different bird to typical *neglecta*. Sharpe himself, however, later on agreed with Oates that the two supposed species are one and the same and impossible to divide, and there is no doubt that the three actual specimens named *polioptera* by Ogilvie-Grant are nothing but young *neglecta*. This is confirmed by the specimens obtained by Herbert at Tung Song and Klong Wanghip, which are all, without doubt, referable to the latter species.

† *Otocompsa flaviventris minor*.

Kloss, Ibis, 1918, p. 200.

Mr. Kloss names this subspecies on a single small female from south-west Siam, rightly pointing out its small size compared with typical *O. f. flaviventris* from Bengal.

Gyldenstolpe's Bulbul, *O. f. johnsoni*, is, however, common in south-west Siam, as is shown by the splendid series obtained by Mr. Herbert and now in the British Museum, and Kloss's *minor* is probably nothing but a young bird of this subspecies, an opinion in which I have no doubt Mr. Kloss would have concurred had he had Mr. Herbert's birds before him for examination.

I propose to comment later on on some of Mr. Kloss's new subspecies of Woodpecker which do not appear to stand the test of an examination of material probably much in excess of that at the command of Mr. Kloss. It is to be regretted, perhaps, that with birds so very variable individually Mr. Kloss has attempted to found subspecies on single specimens, a practice which he and Mr. Robinson so wisely hold in abhorrence as a general rule.

XXXI.—*Notes upon European Birds met with during a short visit to South Africa.* By B. B. RIVIERE, M.B.O.U.

THESE notes were made between September 1915 and February 1916, and, with a few exceptions, refer to birds met with on a farm on the high veld in the eastern Transvaal, fifteen miles from Lake Chrissie and about forty miles from the Swaziland border.

Lanius collurio. RED-BACKED SHRIKE. This bird was very common during November, December, and January near Lake Chrissie. A male which I shot on 17 November was in adult plumage and showed no sign of moult.

Lanius minor. LESSER GREY SHRIKE. On 16 January I had a very close view of two of these birds on a barbed-wire fence just outside Kimberley Station.

Phylloscopus trochilus. WILLOW - WARBLER. Willow - Warblers appeared from time to time in the garden (Lake Chrissie) during November and December, mostly single birds, though on 3 December I saw three together. One I shot on 30 November was in first winter-plumage and not moulting.

Muscicapa grisola. SPOTTED FLYCATCHER. Seen frequently in the garden during November, December, and January (Lake Chrissie). A specimen shot on 24 November was in first winter-plumage, one or two juvenile feathers still being present.

Hirundo rustica. SWALLOW. During the voyage out, on 19 September, when off Cape Blanco, a Swallow came on board and roosted all night in the smoking-room. Another passed the ship flying south on 20 September, whilst two more came on board on the 22nd, when off the coast of Sierra Leone and between fifty and sixty miles from land.

On 5 October I saw several in Cape Town, but they did

not appear to reach Lake Chrissie until 17 October, when I saw one. On 19 October I saw six, and from 1 November onwards they rapidly increased in numbers until, when I left this district in the middle of January, they were there in thousands. These birds struck me as being very pale on the chin and forehead. A specimen I shot on 15 December was moulting the feathers of the back, breast, and tail, the two outer rectrices being still in the quill. There were plenty of birds at Cape Town when I left on 12 February.

Riparia riparia. SAND-MARTIN. On 29 November I shot two Sand-Martins out of a small flock of about a dozen (Lake Chrissie). These were both young birds, and both moulting their secondaries, rectrices, and the feathers on the back of the neck.

Micropus apus. SWIFT. On Christmas-day a flock of Black Swifts, indistinguishable on the wing from this species, were hawking over the garden, but as I was unable to shoot one I cannot be certain of their identity.

Cuculus canorus. CUCKOO. I shot a specimen of this bird on 14 December (Lake Chrissie). It was a male, and was undergoing a complete moult from juvenile to first winter-plumage, including the feathers of the head, body, wing-coverts and primaries, secondaries and rectrices.

Falco naumanni. LESSER KESTREL. From time to time flocks of Lesser Kestrels would come in at sundown to roost in the gum-trees round the farm (Lake Chrissie). On 4 December a flock of between forty and fifty arrived, three of which I shot. These proved to be an adult male and female, neither showing sign of moult, and a young male in plumage very similar to that of the female, but moulting into the adult male plumage on the body. The crops of all three were filled with the remains of scorpions and large spiders. On 12 January many hundreds of these birds were sitting on the telegraph-wires beside the railway line between Breyton and Johannesburg.

Falco vespertinus. RED-FOOTED FALCON. On 30 December I saw a flock of about a dozen Red-footed Falcons on a barbed-wire fence beside the road (Lake Chrissie). These birds appeared to be dark under the wing, and therefore I think belonged to the western, and not the eastern race (*F. v. amurensis*).

Circus macrurus. PALLID HARRIER. This beautiful Harrier was common on the veld around Lake Chrissie. The female is the poultry-rearer's worst enemy, one my host shot on 14 November having a very long score chalked up against her in the matter of young chickens, before she was bagged.

Buteo desertorum. STEPPE BUZZARD. Fairly common on the veld in the Lake Chrissie district, and often to be seen perched on the telegraph-posts and barbed-wire fences beside the road.

Ciconia ciconia. WHITE STORK. Storks did not arrive at Lake Chrissie until 1 December, after which date they were always to be met with wandering about over the veld, or at the "water-pans." Owing to the protection afforded them as "locust birds," they are extremely tame.

Ardea purpurea. PURPLE HERON. One or two usually to be seen at every water-pan (Lake Chrissie). A female which I shot on 12 December was moulting the feathers of the head, neck, and body.

Ardeola ralloides. SQUACCO HERON. Seen several times at the water-pan on the farm (Lake Chrissie).

Streptopelia turtur. TURTLE DOVE. On the outward voyage a Turtle Dove came on board on 21 September when off the coast of Portuguese Guinea, and another on the 22nd when off Sierra Leone.

Glareola nordmanni. BLACK-WINGED PRATINCOLE. I picked up a dead specimen on 13 October, an adult moulting into

winter-plumage, and did not see any more until 27 December, when thousands arrived in the Lake Chrissie district and remained until the 31st. This bird, like the White Stork, is never shot, owing to its invaluable services as a locust destroyer, and it is, I suppose in consequence, quite absurdly tame.

Tringa minuta. LITTLE STINT. A flock of Little Stints frequented a "pan" on the farm for about a week in October. I shot one out of this flock on 13 October—a young bird acquiring its first winter-plumage.

Machetes pugnax. RUFF. A large flock of these birds frequented the same pan during October, November, and December, but were very wild. I shot three on 12 December which were all adult Reeves having just completed their autumn moult.

Totanus nebularius. GREENSHANK. Two seen on 4 November (Lake Chrissie).

Totanus totanus. REDSHANK. During the voyage out on 22 September, between Lat. 7° & 8° N., a Redshank appeared over the ship flying in company with three Whimbrel. All four birds circled round once calling, and then disappeared due south, flying very fast and strongly.

Totanus glareola. WOOD-SANDPIPER. This bird was very common during October, November, and December, and usually to be met with beside any river or water-pan. Two I shot on 8 November and 5 December were both adults and both undergoing full moult.

Numenius phæopus. WHIMBREL. During the outward voyage, on 16 September, when off the coast of Portugal and far out to sea, having passed 150 miles west of Finisterre, a very weary-looking Whimbrel appeared and flew round the ship, calling for about half an hour, occasionally trying to alight on the boat-deck. On the 17th at 9 A.M. (twelve

hours' run from Madeira) another passed the ship flying strongly and heading due south, and a third at 6 P.M. when in sight of Porto Santo. On the 22nd (off Sierra Leone) three more passed, flying south.

Sterna sandvicensis. SANDWICH TERN. I noticed a Sandwich Tern fishing in Table Bay on several days during the end of January.

[*Sturnus vulgaris*. STARLING. This bird, introduced at Rhondebosch near Cape Town by Mr. Cecil Rhodes in the year 1898, I found to be fairly common in Cape Town. All the birds I saw in January appeared to be in winter-plumage.]

I am indebted to Mr. H. F. Witherby for his help in determining the condition of plumage in the few birds which I shot.

XXXII.—*A List of the Birds of the Anglo-Egyptian Sudan, based on the Collections of Mr. A. L. Butler, Mr. A. Chapman and Capt. H. Lynes, R.N., and Major Cuthbert Christy, R.A.M.C. (T.F.). Part II* *. ALAUDIDÆ — HIRUNDINIDÆ. By W. L. SCLATER, M.B.O.U., and C. MACKWORTH-PRAED, M.B.O.U.

(Plate X.†)

INTRODUCTION.

The second portion of the List of the Birds of the Sudan completes the Passeres.

It contains descriptions of the following new subspecific forms :—

Cinnyris osea butleri, *Rhodophoneus cruentus kordofanicus*, *Tschagra senegala sudanensis*, *Cisticola erythrops roseires*, *C. e. zwaiensis*, *Parisoma blanfordi somaliensis*,

* For Part I. and map, see pp. 416–476.

† For full Explanation of the Plate, see p. 721.

Sylvietta rufescens transvaalensis, *Eremomela flaviventris alexanderi*, *Elminia longicauda loandæ*, and *Hirundo puella unitatis*.

We have to thank Mr. Butler for much information and for allowing us to consult a valuable manuscript list of Sudanese birds compiled by himself which has proved most useful. Mr. Butler's notes have "*A. L. B.*" appended to them.

Family ALAUDIDÆ.

Alæmon alaudipes alaudipes.

Certhilauda alaudipes (Desf.) ; Shelley, B. A. iii. p. 19.

Alæmon alaudipes (Desf.) ; Butler, Ibis, 1905, p. 307, 1908, p. 214.

[B. coll.] 1 Shendi Mch., 2 Bir Nurayet Nov. Ber. ;
6 Omdurman Apl.—Nov., 3 Khartoum Dec. Kh.

[C. & L. coll.] 6 Omdurman Mch. Kh.

Alæmon alaudipes desertorum.

Alauda desertorum Stanley, in Salt's Exped. Abyss. 1814, App. p. 60 : Abyssinia.

[C. & L. coll.] 2 Port Sudan Apl., 1 nr. Sinkat Apl.
R.S.

This bird takes the place of the last along the shores and on the islands of the Red Sea.

Melanocorypha bimaculata.

Alauda bimaculata Ménétriés, Cat. Rais. Cauc. 1832, p. 37 : mountains near Talysch, Persia.

Melanocorypha bimaculata (Mén.) ; Shelley, B. A. iii. p. 121.

[B. coll.] 1 Bir Nigenm Nov. Ber. ; 1 Port Sudan Mch.
R.S. ; 15 Khartoum Jan. Mch. Oct., 1 Omdurman
Feb., Kh.

Calandrella brachydactyla brachydactyla.

Alauda brachydactyla Leisler, Wetterau. Gesellsch. Ann. iii. 1814, p. 357 : S. France.

Calandrella brachydactyla (Leisl.); Shelley, B. A. iii. p. 129; Butler, Ibis, 1905, p. 308, 1908, p. 214.

[B. coll.] 3 Jebel Tumblahit, 1 Wadi Mogileb Nov. Ber.; 14 Khartoum Jan. Feb. Oct. Nov. Dec.

[C. & L. coll.] 2 Sinkat Mch. R.S.; 1 near Sennar Jan. Sen.; 2 Omdurman Mch. Kh.; 3 White Nile, Lat. 14° & 15° N. Jan., 1 Taufikia Jan., 1 Renk Mch. U.N.

The more eastern form, *C. b. longipennis*, has occurred in Egypt on migration (Nicoll, Ibis, 1912, p. 426), and very possibly occurs in the Sudan as well, though not yet recorded.

***Calandrella minor minor*.**

Calandritis minor Cabanis, Mus. Hein. i. 1851, p. 123: N.E. Africa.

Calandrella minor minor (Cab.); Hartert, V. p. F. p. 218.

Heuglin (Orn. N.O.-Afr. p. 697) gives Nubia in spring and autumn on migration, for this species, but there is no later record.

There are no Sudanese examples in the Museum.

***Mirafra fischeri*.**

Mirafra fischeri (Reichw.); Shelley, B. A. iii. p. 43; Butler, Ibis, 1908, p. 215.

[B. coll.] 1 Makwak Jan. B.G.; 2 nr. Rejaf Apl., 1 Kajo Kaji Mch. L.E.

It is difficult to arrive at any satisfactory conclusions in regard to this species. There are probably several races, though the Lado birds agree very well with an example in the Museum from Mombasa, close to the type-locality Rabai. We are strongly of opinion that there are two seasonal phases of this form—a reddish phase and a darker blackish phase. The birds here catalogued, collected Jan.-Apl., belong to the blackish phase, whereas an example obtained by Emin Pasha at Wadelai in August is in the rufous dress.

Mirafra zombæ of Grant is founded on a Nyasaland bird in the blackish phase, and will probably be found to have a

reddish dress at other times of the year, similar to that of *M. fischeri* if not identical with it.

Mirafra sobatensis.

Mirafra sobatensis Lynes, Bull. B.O.C. xxxiii. 1914, p. 129.

[C. & L. coll.] 1 White Nile, Lat. 10° N. Jan. (type of the species); 2 Malakal Jan., 1 Jebel Zeraf Feb., 2 mouth of Sobat R. Feb. U.N.

This very distinct species was discovered by the Chapman-Lynes Expedition on the plains near the junction of the Sobat River with the White Nile.

Mirafra cheniana chadensis.

Mirafra chadensis Boyd Alexander, Bull. B. O. C. xxi. 1908, p. 89: L. Chad.

Mirafra cantillans apud Butler, Ibis, 1905, p. 308.

[B. coll.] 1 Khartoum Apl. Kh. ; 3 Gedaref May, Kas.

These birds are undoubtedly identical with a series of Larks collected by Alexander in northern Nigeria and near Lake Chad.

The subspecies is very close to the Indian *M. c. cantillans*, but is rather paler. Following Zedlitz (J. f. O. 1916, p. 59), we believe that both these, as well as several of the African races, must be placed as subspecies of the South African *M. cheniana*, the oldest name in the group.

Mirafra albicauda.

Mirafra albicauda Reichw. J. f. O. 1891, p. 223: Gonda (=Igonda) near Tabora, German East Africa; Butler, Ibis, 1905, p. 309.

[B. coll.] 2 Gedaref Apl. May, Kas.

[C. & L. coll.] 1 Sobat R. Jan. U.N.

In the J. f. O. 1916, p. 59, Count Zedlitz gives a list of the races of *M. cheniana* and includes *M. albicauda* among them. This, however, we cannot accept, as we have specimens of *M. albicauda* in the Museum from throughout the range of *M. c. chadensis*. Butler mentions that he found them often in company with *M. c. chadensis*, and that they were in breeding condition. Is it possible that *M. albicauda*

is a dimorphism of the northern races of *M. cheniana*, although it is often slightly larger than the lighter-coloured form? On the material before us, however, we cannot do otherwise than regard *M. albicauda* as a distinct species.

Mirafra cordofanica.

Mirafra cordofanica Strickland, P. Z. S. 1850, p. 218, pl. 23: Kordofan; Butler, Ibis, 1905, p. 308.

[B. coll.] 2 Um Bosha May, Kor.

A rare species, as noticed by Shelley.

Pinarocorys erythropygia.

Pinarocorys erythropygia (Strickl.) ; Shelley, B. A. iii. p. 74; Butler, Ibis, 1907, p. 467, 1908, p. 215, 1909, p. 76.

[B. coll.] 1 Malakal May, U.N.; 5 Pongo river Feb., 1 Wau Apl. B.G.; 2 nr. Rejaf Apl. L.E.

The type was from Kordofan. The birds from Bahr el Ghazal are distinctly darker than those in the Museum from the Gold Coast hinterland and northern Nigeria, as well as from a single old specimen said to be from Kordofan. If they turn out to be sufficiently distinct, they can be called *P. e. infuscata* (Heuglin, J. f. O. 1864, p. 273).

Heliocorys modesta modesta.

Heliocorys modesta (Heugl.) ; Shelley, B. A. iii. p. 113; Butler, Ibis, 1908, p. 214, 1909, p. 76.

[B. coll.] 2 Wau Jan. Apl., 2 Katta Jan., 1 Kuanga Feb., 1 Chak Chak Feb., 2 west of Tonj Jan. B.G.; 3 Bor, Mon.; 2 Kajo Kaji Meh. Apl. L.E.

[Chr. coll.] 4 Wau July-Aug. B.G.

Galerida cristata eritreæ.

Galerida cristata eritreæ Zedlitz, O. M. xviii. 1910, p. 59: Ghedem, Red Sea Coast.

Galerida cristata (Linn.) ; Butler, Ibis, 1909, p. 393.

[B. coll.] 5 Port Sudan Apl. May, R.S.

[C. & L. coll.] 5 Port Sudan Dec., 1 Erkowit Apl. R.S.

These birds have been kindly identified for us by Dr. Hartert.

We should suggest, however, that the race indicated by Hartert (Vög. pal. Fauna, i. p. 234) as *Galerida cristata* subsp.? from the Abyssinian coast-lands, and subsequently named *G. c. nubica* by Bianchi (Bull. Acad. Sci. Petersburg, xxv. 1905, p. 69), is identical with this subspecies.

Galerida cristata isabellina.

Galerita cristata isabellina Bp. Consp. Av. i. 1850, p. 245: Nubia.

Galerita cristata (Linn.) ; Butler, Ibis, 1905, p. 309.

[B. coll.] 11 Khartoum Feb. Apl. July Oct. Dec.,
2 Omdurman Apl. Kh.

There are two Crested Larks in the Chapman and Lynes collection from the Sinkat-Erkowit plain which are quite different from the others from the Red Sea Province. One especially is exceedingly pale, but both are paler isabelline than even *G. c. isabellina* from Khartoum, and very much paler than *G. c. eritreæ*.

There is also one bird in the same collection from the White Nile in Lat. 15° N. This, which one would expect to be the pale form, *G. c. isabellina*, is not, but is darker, resembling on the back *G. c. eritreæ*, but with the throat more finely streaked. We have no other specimens from south of Khartoum.

Galerida cristata altirostris.

Galerita altirostris Brehm, Vogelfang, 1855, p. 124: Upper Egypt.

Dr. Hartert states (Nov. Zogl. xxiv. 1917, p. 440) that *G. c. altirostris* Brehm also occurs in the northern part of the Sudan, along the Dongola bend of the Nile. The type was obtained near Ambukol, and others in the Tring Museum were collected at Merowe, also in Dongola.

Calendula dunni.

Calendula dunni Shelley, Bull. B. O. C. xiv. 1904, p. 82: Kordofan.

This species was discovered at the Ogageh Wells in

608 Messrs. Slater and Mackworth-Praed on [Ibis,
western Kordofan in November 1902 by Major W. H.
Dunn. It bears a remarkable superficial resemblance to
Mirafra cordofanica, which occurs at the same place. It is
not represented in the present collections.

***Ammomanes cinctura arenicolor*.**

Ammomanes arenicolor (Sund.) ; Shelley, B. A. iii. p. 103 ;
Butler, Ibis, 1905, p. 310.

[B. coll.] 2 25 miles west of Omdurman Jan., 1 Omdur-
man Mch. Kh.

[C. & L. coll.] 1 Battlefield of Omdurman Mch. Kh. ;
2 Sinkat Mch., 2 Port Sudan Apl. R.S.

The birds from Omdurman are less leaden and more
reddish in tone above and below, and we thought at one
time they might be worthy of subspecific distinction ; but
similar birds are to be found in the large series of the
Larks at Tring from certain spots in the Algerian Sahara,
and there seems to be hardly sufficient grounds for
separation.

As the light-coloured group of these Larks is very distinct
from the Indian *A. phœnicura*, we prefer to place them as
subspecies of *A. cinctura*, the form from the Cape Verde
Islands.

We recognize the following :—

Ammomanes cinctura cinctura (Gould) : Cape Verde Is.

A. c. arenicolor (Sund.) : Algerian Sahara and Tunis to
Palestine and the Nile valley.

A. c. pallens Le Roi, apparently confined to the Bayuda
desert, north of Khartoum.

A. c. zarudnyi (Hartert) : Persia and Baluchistan.

***Ammomanes cinctura pallens*.**

Ammomanes phœnicura pallens Le Roi, O. M. xx. 1912,
p. 6.

There is a single example of this form in the Tring
Museum, obtained by Dr. Koenig in the Bayuda desert
north of Khartoum.

It is smaller and paler than *A. c. arenicolor*.

Ammomanes deserti samharensis.

Ammomanes samharensis Shelley, B. A. iii. 1902, p. 99 : Amba.

Ammomanes deserti (Licht.) ; Butler, Ibis, 1909, p. 393.

[B. coll.] 3 Bir Nurayet Nov., 2 Bir Shigrib Nov., 1 Bir Terfawi Nov., 1 Nigeim Nov. Ber. ; 3 Erba Mch., 2 Khor Arbat May, 1 Jebel Bawati May, 1 Jebel Karbush Mch. R.S.

[C. & L. coll.] 6 Sinkat Mch., 1 Erkowit Apl., 1 Kamob-sana Dec. R.S.

A careful comparison of these Desert-Larks with those in the British Museum convinces us that they are identical with the form described by Shelley as *A. samharensis* from Amba in the highlands of what is now Eritrea, the type of which is in the Museum.

Hartert considers this race identical with *A. assabensis* Salv. from Asseb on the southern Abyssinian coast near the straits of Bebel Mandeb, but we believe them to be quite distinct, as we have examples in the Museum from Hensa and Somadu in northern Somaliland, which were compared with specimens of *A. assabensis* sent by Salvadori, and were pronounced identical. These are very much darker than the northern Abyssinian and Port Sudan birds. From southern Somaliland comes *A. d. akeleyi* Elliot, quite a distinct paler race.

Ammomanes deserti erythrochroa.

Ammomanes lusitana erythrochroa Reichw. J. f. O. 1904, p. 307 : Ambukol.

Ammomanes deserti (Licht.) ; Butler, Ibis, 1905, p. 310.

[B. coll.] 1 25 miles west of Omdurman Jan. Kh.

Pyrrhulāuda leucotis leucotis.

Pyrrhulāuda leucotis (Stanley) ; Shelley, B. A. iii. p. 86 ; Butler, Ibis, 1909, p. 76.

[B. coll.] 2 Wau Mch. Apl. B.G. ; 1 Mongalla.

[C. & L. coll.] 7 White Nile lat. $9\frac{1}{2}^{\circ}$ N. Feb., 3 near Tonga Feb. Mch., 3 mouth of Sobat river Jan. Feb., 2 near Lake No, Feb. U.N.

***Pyrrhulauda leucotis melanocephala*.**

Pyrrhulauda melanocephala (Licht.) ; Shelley, B. A. iii. p. 90 ; Butler, Ibis, 1905, p. 311, 1908, p. 216.

Pyrrhulauda lacteidorsalis Shelley ; Butler, Ibis, 1905, p. 313.

[B. coll.] 2 Gedaref May Kas. ; 18 Khartoum Feb. Apl. May July Aug. Sept. Oct. Nov.

[C. & L. coll.] 6 near Sennar Dec. Sen. ; 6 White Nile lat. 14° & 15° N. Jan., 1 Kaka Jan., 2 Renk Mch.

U.N.

P. l. melanocephala is the prevailing form at Khartoum ; some birds, however, are intermediate, showing an approach to *P. l. leucotis* in the blackening of the lesser wing-coverts. The examples from Gedaref and three of those from Khartoum in the Butler series show this feature. The range of this race extends westwards to Senegambia, whence came the type. There are good typical examples in the Museum from Northern Nigeria.

In Abyssinia and on the upper Nile from Fashoda southwards this race is replaced by *P. l. leucotis*. The bird listed from Mongalla is undoubtedly *P. l. leucotis* ; the two from Wau are probably so, but are too young to be identified with certainty.

P. lacteidorsalis is certainly nothing but a pale variation (see Butler, Ibis, 1905, p. 314). We have examined the type in the Tring Museum.

***Pyrrhulauda frontalis frontalis*.**

Pyrrhulauda frontalis Bonaparte, Consp. Av. i. 1850 p. 512 : Nubia ; Butler, Ibis, 1905, p. 310.

Pyrrhulauda butleri Shelley, Bull. B. O. C. xiii. 1903, p. 73 : nr. Omdurman.

[B. coll.] 1 Shendi Mch. Ber. ; 1 Fatasha Feb., 3 Omdurman Mch. Nov. Kh. ; 2 Hashaba May, Kor.

[C. & L. coll.] 4 White Nile lat. 15° N. Jan. **U.N.**

We have examined the type of *P. butleri* and are satisfied that it is identical with *P. f. frontalis*.

Pyrrhulauda frontalis melanauchen.

Pyrrhulauda frontalis (nec Bp.); Shelley, B. A. iii. p. 79.

Pyrrhulauda melanauchen (Cab.); Butler, Ibis, 1908, p. 216, 1909, p. 393.

[B. coll.] 4 Port Sudan Apl. May, 1 Jebel Okwat Mch. **R.S.**

[C. & L. coll.] 5 Port Sudan Dec. **R.S.**

One example from Port Sudan in the Butler collection is entirely without the white frontal spot.

Family MOTACILLIDÆ.***Motacilla alba alba.***

Motacilla alba Linn.; Shelley, B. A. ii. p. 272; Butler, Ibis, 1905, p. 304, 1908, p. 213, 1909, p. 391.

[B. coll.] 11 Khartoum Feb. Oct. Nov. Dec.

[C. & L. coll.] 1 Kamisa Dec. **Sen.**; 1 mouth of Sobat river Jan. **U.N.**

A winter visitor, abundant and widely distributed.

Motacilla vidua.

Motacilla vidua Sundev.; Shelley, B. A. ii. p. 268; Butler, Ibis, 1905, p. 304, 1908, p. 213, 1909, p. 76.

[B. coll.] 1 Setit river May, **Kas.**; 3 Roseires Apl. & Aug., 2 Fazogli May, **Sen.**; 1 Khartoum Oct. **Kh.**; 2 Raffali Feb. **B.G.**

Motacilla cinerea cinerea.

Motacilla cinerea Tunstall, Orn. Brit. 1771, p. 2; British Isles.

Motacilla boarula auctorum.

Motacilla melanope Butler, Ibis, 1905, p. 305, 1908, p. 213.

[B. coll.] 1 Khartoum Oct.

[C. & L. coll.] 1 Erkowit Mch. **R.S.**

On migration, comparatively scarce (*A. L. B.*).

Motacilla flava flava.

Motacilla flava flava Linn.; Hartert, Vög. pal. Faun. p. 287.

[B. coll.] 2 Khor Arbat May 6 & 12, R.S. ; 23 Khartoum Oct. 14 to Apl. 17.

A common winter migrant widely distributed (*A. L. B.*).

A fine series of Yellow Wagtails showing a certain amount of variation. Among them are two (B.M. reg. no. 1915/12/24/1455-6) with the white superciliaries very nearly completely absent which we were inclined to identify with *M. f. borealis*, and another pair (B.M. reg. no. 1915/12/24/1436, 1429) with a strongly marked yellow eyebrow. These were submitted to Dr. Hartert, who has kindly examined them and pronounced them to be merely aberrant examples of *M. f. flava*.

***Motacilla flava dombrowskii*.**

Motacilla flava dombrowskii (Tschusi) ; Hartert, Vög. pal. Faun. p. 289.

[B. coll.] 6 Khartoum Meh. 31 to Apl. 17, Kh. ;
1 Gamiza Apl. 8, B.G.

Some of the Yellow Wagtails wintering in the Sudan appear to be of this race, which breeds in Roumania and is distinguished by its very black ear-coverts. Dr. Hartert agrees with us in this identification.

***Motacilla flava melanocephala*.**

Motacilla melanocephala Licht. Verz. Doubl. Zool. Mus. 1823, p. 36 : Nubia ; Butler, Ibis, 1909, p. 393.

Motacilla flava melanocephala Licht. ; Hartert, Vög. pal. Faun. p. 296.

[B. coll.] 7 Khartoum Jan. Apl. Dec. Kh. ; 1 Khor Arbat May, R.S.

[C. & L. coll.] 2 Lake No Feb. U.N.

A common winter migrant (*A. L. B.*).

***Motacilla flava melanogrisea*.**

Motacilla flava melanogrisea E. v. Homeyer ; Hartert, Vög. pal. Faun. p. 296.

Motacilla melanocephala (nec Licht.) ; Butler, Ibis, 1905, p. 305.

[B. coll.] 2 Khartoum Mch. Dec.

The December bird has a pronounced white eye-stripe. This form has been previously recorded by Hartert from the Sudan.

Motacilla flava, subsp.?

[B. coll.] 1 Khor Arbat May 13, R.S.; 6 Khartoum Oct. 31 to Apl. 5.

[C. & L. coll.] 2 Singa Dec. Sen.; 1 Hassania I. Jan. 11,
1 Lat. 15° Jan. 9, W.N.; 1 Meshra Zeraf Jan. 23,
U.N.

[Chr. coll.] 1 Yambio Mch. B.G.

These are all young birds and cannot be identified with any certainty.

The other races of Yellow Wagtails which in all probability pass through the Sudan, though they are not represented in these collections nor in the British Museum collection from this locality, are:—

1. *M. f. CAMPESTRIS*. This certainly occurs; it is reported by Butler (*Ibis*, 1905, p. 306) as common, also by Heuglin (*Orn. Nordost-Afr.* p. 322). Some of the young birds in the collection no doubt belong to this race.

2. *M. f. BOREALIS*. This bird also almost certainly occurs, although we have not been able to find an adult specimen which we could absolutely definitely assign to this race.

3. *M. f. CINEREOCAPILLA*. Hartert (*Vög. pal. Faun.* p. 293) reports an example from Lado. There is no reason why it should not occur on migration throughout the Nile valley.

It is possible that the resident Egyptian race, *M. f. pygmaea*, occurs sometimes in the Sudan, but we have as yet no evidence of it. We do not think the bird mentioned by Butler (*Ibis*, 1909, p. 392) belongs to this form, we believe it is a scarcely adult and rather small example of *M. f. flava*.

Anthus trivialis trivialis.

Anthus trivialis (Linn.); Shelley, B. A. ii. p. 299; Butler, Ibis, 1905, p. 306, 1908, p. 214, 1909, p. 76.

[B. coll.] 4 Khartoum Oct.; 1 Raffali Feb., 1 Kojali Mch. B.G.

[C. & L. coll.] 2 Erkowit Mch. Apl. R.S.

[Chr. coll.] 2 Yei Nov. L.E.; 1 Mt. Baginzi Mch. B.G.

Anthus leucophrys gouldi.

Anthus gouldi Fraser, P. Z. S. 1843, p. 27: Cape Palmas, W. Africa; Shelley, B. A. ii. p. 307; Butler, Ibis, 1909, p. 76.

[B. coll.] 1 Kojali Feb. B.G.; 6 Mongalla May, July-Sept. Mon.

We have carefully examined the very large series of this species in the British Museum, and we have come to the conclusion that the list of races given by Zedlitz (J. f. O. 1911, p. 48) is correct, though we have not had the opportunity of examining examples from Camerocn. We think, however, that *A. vaalensis* is best treated as a separate species, as we have examples from Cape Colony and Natal, in the range of *A. l. leucophrys*. The Sudan birds are apparently indistinguishable from West African examples. They are certainly much nearer them than they are to *A. l. omoensis* or *A. l. bohndorffi*.

We are satisfied that the name *Anthus pyrrhonotus* of Vieillot, founded on a plate of Levaillant's, cannot stand for this species. The plate represents more likely a species of *Miraфра*, and Levaillant's assertion that it was the "enkelde leeuwewerk" of the colonists is without doubt an error.

Anthus sordidus, near hararensis.

Anthus nicholsoni hararensis Neum. J. f. O. 1906, p. 233: Abu Behr near Harar.

Anthus sordidus apud Butler, Ibis, 1908, p. 214.

[B. coll.] 1 Erkowit Mch. R.S.

[C. & L. coll.] 5 Erkowit Mch. Apl. R.S.

We agree with Professor Neumann's conclusions as to the subspecies of this bird, though, as Hartert points out (Nov. Zool. xxiv. p. 457), it must bear the name *sordidus* and not *nicholsoni*. The specimens before us, however, do not exactly agree with any race, though nearest to *A. s. hararensis*. They are somewhat less plainly striped on the back than the Harar form, and the young bird in the Butler collection is paler than usual. They would appear to be the least plainly striped form of *A. sordidus*, and may very likely have to bear another name.

***Anthus rufulus cinnamomeus*.**

Anthus cinnamomeus Rüppell, N. Wirbelt. 1835, p. 103 : Siemen, Abyssinia ; Reichw. V. A. iii. p. 313.

This form of the Rufous Pipit, though not contained in the Butler, Chapman & Lynes, and Christy collections, occurs in the Sudan. There are examples in the Museum from Khartoum collected by Captain Dunn in March, and from Rejaf in the Lado Enclave collected by Emin Pasha in January.

***Anthus campestris*.**

Anthus campestris (Linn.) ; Shelley, B. A. ii. p. 317 ; Butler, Ibis, 1905, p. 306, 1908, p. 214.

[B. coll.] 2 Erkowit Mch., 1 Jebel Kerbosh Mch. R.S. ;
5 Khartoum Mch. Apl. Oct., 1 Omdurman Feb. Kh.
[C. & L. coll.] 1 Sinkat Mch., 1 Erkowit Apl. R.S. ;
1 Kamisa Dec., 1 near Sennar Dec. Sen. ; 5 White
Nile lat. 14° & 15° N. Jan., 1 Renk Mch. U.N.

A winter visitor, widely distributed.

***Anthus cervinus*.**

Anthus cervinus (Pall.) ; Shelley, B. A. ii. p. 325 ; Butler, Ibis, 1905, p. 306, 1908, p. 214.

[B. coll.] 9 Khartoum, Jan. Mch. Apl. Oct. Nov. Dec.
[C. & L. coll.] 1 Port Sudan Dec. R.S. ; 1 White Nile
lat. 14° N. Jan. U.N.

Also a winter visitor.

Anthus richardi richardi.

Anthus richardi richardi Vieill.; Hartert, Vög. pal. Faun. p. 265.

Two examples of Richard's Pipit were obtained by R. McD. Hawker at Goz Abu Gumar, **W.N.**, on 18 May, 1901 (*cf.* O.-Grant, Ibis, 1902, p. 412). This is the only Sudan record.

Macronyx croceus.

Macronyx croceus (Vieill.); Shelley, B. A. iii. p. 4; Butler, Ibis, 1899, p. 76.

[B. coll.] 2 Meshra el Rek May, **B.G.**; 5 Mongalla, 1 Shambé Jan. **Mon.**; 2 Rejaf Feb. **L.E.**

[C. & L. coll.] 1 near Lake No Feb. **U.N.**

[Chr. coll.] 6 Yei Dec. **L.E.**; 1 Meridi Jan. **B.G.**

Family NECTARINIIDÆ.

Hedydipna platura platura.

Hedydipna platura (Vieill.); Shelley, B. A. ii. p. 16; Butler, Ibis, 1908, p. 210.

[B. coll.] 1 Moyén Jan. **B.G.**

[Chr. coll.] 3 Meridi Feb. **B.G.**

Hedydipna metallica.

Hedydipna metallica (Licht.); Shelley, B. A. ii. p. 15.

Nectarinia metallica Butler, Ibis, 1905, p. 302, 1909, p. 391.

[B. coll.] 6 Khor Arbat May, 1 Erba Mch. **R.S.**; 1 Khartoum Dec.; 1 Roseires July, **Sen.**; 1 Bara Apl. **Kor.**

[C. & L. coll.] 2 Sinkat Mch., 1 Port Sudan Dec. **R.S.**; 3 Kamisa, Dec. **Sen.**

Nectarinia pulchella.

Nectarinia pulchella Bouvier; Shelley, B. A. ii. p. 23; Butler, Ibis, 1905, p. 303, 1908, p. 210, 1909, pp. 75, 391.

[B. coll.] 2 Setit river May, **Kas.**; 5 Roseires May July Aug., 1 Abu Haraz May, **Sen.**; 5 Khartoum June July Oct. Dec.; 1 Pongo river Feb., 1 Chak Chak Feb.,

2 Raffali Feb., 2 Wau Mch. Apl. B.G. ; 4 Mongalla July Sept.

[C. & L. coll.] 6 Kamisa Dec. Sen. ; 1 Jebel Ahmed Aga Jan., 1 nr. Lake No Feb., 1 White Nile lat. $9\frac{1}{2}^{\circ}$ N. Feb. U.N.

From this excellent series of dated skins it would appear that these Sunbirds retain their tails practically throughout the year until they become very worn in December when they are shed, and the new tail commences to sprout in January. The metallic breeding-dress commences soon after and is complete in from May to July. The winter birds resemble the females, but always retain traces of the metallic green on the shoulders and the long tail-feathers, which appear to be only lost for the annual moult.

Nectarinia erythroceria.

Cinnyris erythrocerius (Heugl.) ; Shelley, B. A. ii. p. 49.

[C. & L. coll.] 1 White Nile lat. $9\frac{1}{2}^{\circ}$ N. Feb. W.N.

This species is not represented in the Butler collection, but there are in the Museum, a pair from Magungo, where the Nile leaves Albert Nyanza, and a male from Wadelai, farther north, collected by Emin. The Chapman and Lynes example is a female and was obtained still farther north, near Taufikia, and is almost certainly referable to this species, though identification of female Sunbirds with certainty is always a difficult matter.

Not uncommon in the "sudd" region of the Nile and farther south (A. L. B.).

Cinnyris cupreus.

Cinnyris cupreus (Shaw) ; Shelley, B. A. ii. p. 36 ; Butler, Ibis, 1909, p. 75.

[B. coll.] 6 Roseires July, Aug. Sen. ; 1 Kojali Feb. B.G.

[Chr. coll.] 2 Yei Nov. Dec. L.E. ; Tembura Apl., Meridi Feb. B.G.

Cinnyris splendidus.

Cinnyris splendidus (Shaw) ; Shelley, B. A. ii. p. 45.

[Chr. coll.] 2 Yambio Mch. B.G.

This bird has not previously been recorded from the Sudan, but was obtained about 150 miles west of Yambio by Bohndorff, at Zemio, in the Niam-Niam country. It is a West African form ranging from Senegambia to Gaboon.

Cinnyris habessinicus habessinicus.

Cinnyris habessinicus (Hempr. & Ehr.): Shelley, B. A. ii. p. 46; Butler, 1909, p. 391.

[B. coll.] 6 Erkowit Meh., 7 Khor Arbat May, 1 Jebel Okokreb Meh. **R.S.**

[C. & L. coll.] 4 Sinkat Meh., 1 Kamobsana Dec. **R.S.**

Cinnyris chloropygius orphogaster.

Cinnyris chloropygia orphogaster Reichenow, O. M. vii. 1899, p. 169: Bukoba, Victoria Nyanza.

[Chr. coll.] 1 Yambio Meh. **B.G.**

We are able to identify the following races of *C. chloropygius* from the material in the Museum:—

1. *C. c. CHLOROPYGIUS* (Jard.): Type-locality, Niger river. Wing under 50 mm., and belly a dark olive.

Range. From the Niger to Angola. Gold Coast birds are intermediate between this and the following.

2. *C. c. KEMPI* O.-Grant, Trans. Zool. Soc. xix. 1910, p. 329: Sierra Leone. About the same size, but with much brighter olive underparts.

Range. Sierra Leone and Senegal.

3. *C. c. ORPHOGASTER*, *vide supra*. Resembling *C. c. chloropygius*, but considerably larger. Wing well over 50, average 53 mm.

Range. Lake region to the Welle and the Bahr el Ghazal.

4. *C. c. BINESCHENSIS* Neumann (O. M. 1903, p. 183: Upper Sobat valley, Abyssinia). We have seen the type of this subspecies now in the Tring Museum and it agrees with Neumann's diagnosis, but it is apparently only known from

one example, and it would be desirable to examine more before deciding on its validity.

5. C. c. FAUWELSI Dubois, Rev. Franç. d'Orn. ii. No. 22, 1911, p. 17: Baraka, north of Tanganyika. Stated by Reichenow to be near *C. c. orphogaster*, but with a shorter beak, and to have a marked violet band separating the colours of the breast.

Range. Tanganyika district. There is a bird collected by R. Grauer in the Tring Museum, from the forest west of Tanganyika, which appears to be identical with this race.

We cannot appreciate the distinctness of *C. c. wellensis* Reichw. J. f. O. 1912, p. 321, from the Welle.

***Cinnyris osea butleri*, subsp. n.**

Closely resembling *C. o. osea*, but very much smaller (wing ♂ averaging 49 against ♂ *osea* 54 mm.), and with the lower breast and belly below the violet-metallic patch quite black without sheen, whereas in *C. o. osea* there is a distinct metallic sheen on that part.

Type, ♂ ♀, Kajo Kaji, Lado Enclave, Mch. 1915, B.M. reg. no. 1915/12/24/2345-6.

Measurements: Wing, ♂ 49-50, ♀ 48; bill, ♂ 14.5, ♀ 13.5; tail, ♂ 35, ♀ 30 mm.

Of a corresponding series of *C. o. osea*—wing, ♂ 53-56, ♀ 51-53; bill, ♂ 17-19, ♀ 16; tail, 40 mm.

[B. coll.] 4 Kajo Kaji Nov. Mch. L.E.

[Chr. coll.] 4 Yei Nov. Dec. L.E.; 1 Meridi Feb. B.G.

This is a very interesting discovery, as no form of *C. osea*, which ranges from Palestine to Aden, has hitherto been found in Africa.

A single specimen was sent to Mr. Butler by Capt. C. Graham; subsequently Mr. Butler himself found it in the same district. In a letter to Mr. Ogilvie-Grant, Butler writes as follows: "The *Cinnyris* I sent you I met with a few times on the Kajo Kaji plateau, but it was scarce and

very shy and restless. I succeeded in shooting three—♂ full plumage, ♂ changing to full plumage, and one ♀. It is a very lovely little thing, and I believe it is new. It certainly seems to be rather near *C. osea*, but the distance between the Palestine locality and Kajo Kaji (about 4° N.) is too great for it likely to be the same, and it seems much smaller.”

We have not described this bird as a full species, as the distinction between it and *C. o. osea* is so slight; but, on the other hand, there appear to be no birds of this type between the Bahr el Ghazal and Arabia—a considerable gap.

Cinnyris venustus fazoglensis.

Nectarinia fazoglensis Heuglin, Orn. N.O.-Afr. ii. 1873, Appen. p. lxx: Fazogli.

Cinnyris affinis Rüpp. (nec Shaw); Shelley, B. A. ii. p. 64.

Cinnyris venustus fazoglensis (Heugl.); Reichenow, V. A. iii. p. 473.

The type of this Sunbird was obtained by the Duke of Württemberg at Fazogli. It is abundant in the Abyssinian plateau, whence the Museum has a good series. There is one example from Kordofan obtained from Verreaux, and it is also stated by Rüppell to occur there.

Chalcomitra senegalensis cruentata.

Chalcomitra cruentata (Rüpp.); Shelley, B. A. ii. p. 100.

[B. coll.] 8 Roseires Aug. Sen.

This subspecies is quite distinct from *C. s. acik*. The throat is not metallic throughout, but is black with a very small metallic spot sometimes present between the black throat and red chest.

On the presence or absence of this spot depends the distinction between *C. s. cruentata* and *C. s. scioana* Salvad. from Shoa, but the character does not seem to be constant. In the four Roseires males, three have the spot quite distinct, in a fourth it is absent, and this seems to be the case with Abyssinian birds as well.

Chalcomitra senegalensis acik.

Nectarinia acik Hartmann, J. f. O. 1866, p. 205 : Djur, Bahr el Ghazal.

Chalcomitra acik (Antin.); Shelley, B. A. ii. p. 90 ; Butler, Ibis, 1908, p. 211, 1909, p. 75.

[B. coll.] 2 Makwak Jan.-Apl., 2 Wau Jan. Mch.,
1 Kuanga's Feb., 2 Chak Chak Feb., 1 Raffali Feb.,
1 Kojali Feb. B.G.; 5 Sheik Tombé, 2 Mongalla,
2 Kenisa Jan. Mon.

[C. & L. coll.] 1 White Nile lat $9\frac{1}{2}^{\circ}$ N. Feb. U.N.

[Chr. coll.] 10 Yei Nov. L.E. ; 3 Tembura Apl. B.G.

This subspecies was named by Hartmann on Antinori's description, and should be attributed to the first-named author.

***Cyanomitra obscura*, subsp.?**

[Chr. coll.] 1 Mt. Baginzi, Mch. B.G.

This Sunbird has given us some trouble. It apparently belongs to the group without metallic colouring of which *C. obscura* and *C. olivacea* are the best-known forms. Neumann and Zedlitz recognize several races, and this single bird does not seem to fit into any of them. It agrees most nearly with the description of Neumann's *C. o. neglecta* (J. f. O. 1900, p. 297), from Kibwesi, in British E. Africa; this is paler than the West African *C. o. obscura* and the Abyssinian *C. o. ragazzii*, but we hesitate to identify it with this form, as we have found no examples of it in the Museum and the locality does not fit in with the identification.

Cyanomitra verticalis viridisplendens.

Cinnyris viridisplendens Reichenow, J. f. O. 1892, pp. 54, 132: Bukoba, Victoria Nyanza.

[Chr. coll.] 3 Meridi Jan. Feb., 3 Yambio Mch., 1 Wau
July-Aug. B.G.

This Sunbird has not been previously met with within the boundaries of the Sudan.

An examination of the material in the Museum leads us to the conclusion that there are four distinguishable races of this Sunbird :—

1. *C. v. VERTICALIS* (Lath.), the type-locality of which should doubtless be fixed at Senegal. Back more golden olive-green. Metallic colour of head rather more blue than green.

Distr. From Senegal to Gold Coast Colony.

2. *C. v. CYANOCEPHALA* (*Certhia cyanocephala* Shaw, Gen. Zool. viii. 1811, p. 203 : Loango). Back rather darker and less golden ; metallic colouring the same.

Distr. Cameroon to Gaboon, Angola, and North-western Rhodesia.

3. *C. v. VIRIDISPLENDENS* (Reichw.), *v. supra*. Back a duller olive-green ; metallic colouring rather more green than blue.

Distr. From the southern Bahr el Ghazal through the Lake districts and the eastern part of the Belgian Congo.

4. *C. v. ALINÆ* Jackson, Bull. B. O. C. xiv. 1904, p. 94 : Ruwenzori.

Back much brighter than either of the others with almost a rufous tinge ; metallic colour deeper blue, and underparts considerably darker and pectoral tufts deeper yellow. This is a mountain-race confined to the slopes of Ruwenzori above 5500 ft. *C. v. viridisplendens* is found on the slopes below 6000 ft., so the subspecies must meet in this region. The two forms are so distinct that it is probable that they do not interbreed, in which case they should be regarded as distinct species.

We have found no bird exactly answering to the description of *C. v. tanganjicæ* Reichw. (J. f. O. 1915, p. 128).

Anthreptes longmari haussarum.

Anthreptes longmari haussarum Neumann, J. f. O. 1906, p. 245 : Agome Tongbe in Togoland.

Anthothreptes longuemarii apud Butler, Ibis, 1908, p. 211, 1909, p. 75.

[B. coll.] 1 Katta Jan., 1 Pongo river Feb., 1 Chak Chak, 2 Kojali Feb., 1 Wau Mch. B.G.

[Chr. coll.] 2 Wau July Aug. B.G.

Anthreptes longmari orientalis.

Anthreptes orientalis Hartlaub, J. f. O. 1880, p. 213 : Lado.

[B. coll.] 1 Giggling May, 4 Sheik Tombé, 2 Mongalla Feb. July Sept. Mon.; 2 Lado Feb. Mch. L.E.

This race is easily distinguished from *A. l. haussarum* by its markedly smaller size; wing in males, under 70 against 75–81 mm., and by the considerably greater patch of metallic green on the wing-shoulders. It also has a green wash on the rump and lower back instead of the plain purple of *A. l. haussarum*. It is to be expected, however, that birds from the southern and eastern Bahr el Ghazal will show intermediate characteristics.

We follow the original spelling and call this species *Anthreptes longmari*, not *Anthothreptes longuemarii*.

The subspecific forms are listed by Zedlitz (J. f. O. 1916, p. 73), and we agree with his conclusions, so far as an examination of the birds in the British Museum helps us. The following are the forms recognized by him:—

1. A. L. LONGMARI Lesson : type-locality, Senegal.

2. A. L. HAUSSARUM Neumann, *v. supra*.

Distr. Liberia to Togo and eastwards to the Bahr el Ghazal.

3. A. L. ANGOLENSIS Neumann, J. f. O. 1906, p. 246 : Duque de Braganza, Angola.

Distr. Angola east through Belgian Congo to Unjamwesi, east of Lake Tanganyika.

With this form we believe *Anthothreptes carruthersi* (O.-Grant, Bull. B. O. C. xix. 1907, p. 106 : West shore of Tanganyika) is synonymous.

4. A. L. NYASSÆ Neumann, J. f. O. 1906, p. 247 : near Zomba.

Distr. Nyasaland and Mashonaland.

5. *A. L. ORIENTALIS*, Hartlaub, *v. supra*.

Distr. Lado and Mongalla Provinces of the Sudan, Abyssinia, British East Africa, and German East Africa.

6. *A. L. NEUMANNI* Zedlitz, J. f. O. 1916, p. 75.

Distr. Somaliland and south-east Abyssinia.

All these races seem fairly clear and well defined. We have not, however, had the opportunity of examining Senegal specimens, and, if they eventually prove to be indistinguishable from *A. l. haussarum*, the latter name must become a synonym.

Anthreptes aurantia appears to be the representative species in Cameroon and Gaboon.

***Anthreptes collaris hypodilus*.**

Nectarinia hypodilus Jardine, Contr. Orn. 1851, p. 153: Fernando Po.

Anthreptes collaris hypodilus (Jard.) ; Reichw. Vög. Afr. iii. p. 443.

Shelley (P. Z. S. 1888, p. 39) records an example of this Sunbird collected at Lado by Emin, 23 October 1885, but it does not appear to be in the Museum collections, where the subspecies is not represented by Sudanese examples.

Family ZOSTEROPIDÆ.

***Zosterops abyssinica abyssinica*.**

Zosterops abyssinica Guér. Ferr. et Gal. ; Shelley, B. A. ii. p. 192 (part.) ; Butler, Ibis, 1908, p. 212.

[B. coll.] 8 Erkowit Mch. R.S.

[C. & L. coll.] 4 Erkowit Mch. Apl. R.S.

Zedlitz (J. f. O. 1911, p. 57) recognizes four races of this species.

1. *Z. A. ABYSSINICA* : Eritrea and North Abyssinia.
2. *Z. A. OMOENSIS* : South Shoa and the Omo valley.
3. *Z. A. SOCOTRANA* : Sokotra.
4. *Z. A. ARABS* : South Arabia.

Zosterops senegalensis senegalensis.

Zosterops senegalensis Bp.; Shelley, B. A. ii. p. 173 (part); Butler, Ibis, 1908, p. 212, 1909, p. 76.

Zosterops senegalensis senegalensis Bp.; Neumann, O. M. 1904, p. 110.

[B. coll.] 1 Pongo river Mch., 2 Moyen May, B.G.

[Chr. coll.] 1 Yambio Mch. B.G.

Zosterops senegalensis tenella.

Zosterops tenella Hartlaub, J. f. O. 1865, p. 11: Keren, Eritrea.

[B. coll.] 4 Roseires July, Aug. Sen.

These Roseires White-eyes agree very well with the one from Lake Tsana in the Museum mentioned by Neumann in his review of the genus *Zosterops* (O. M. 1904, p. 109). They are slightly larger (wing, ♀, 57-59 mm.), and paler than *Z. s. senegalensis* (wing, ♀, 56-57 mm.). *Z. icterovirens* Württemb. from the Atbara is a synonym. The type is in the Berlin Museum.

Family CETHIIDÆ.

Salpornis salvadorii.

Salpornis salvadorii (Boc.); Shelley, B. A. ii. p. 260.

Emin obtained this bird at Langomeri, Tobbo, and Wadelai, all just about the southern boundary of the Sudan, near Nimule; also in the Makraka country, which is marked in the map in Reichenow's 'Vögel Afrikas' to the east of Rejaf, and well within our limits. It was described as distinct from the southern bird by Hartlaub (P. Z. S. 1884, p. 415) under the name *S. emini*.

One of the birds of Emin's collecting, marked "♂ Tobbo 22 v. 83," is in the Museum collection.

Family PARIDÆ.

Parus niger leucomelas.

Parus leucomelas Rüpp.; Shelley, B. A. ii. p. 228; Butler, Ibis, 1905, p. 304, 1908, p. 212, 1909, p. 76.

[B. coll.] 7 Roseires April–Aug. Sen.; 3 Raffali Feb.,
1 Menyah Jan. B.G.; 1 Rejaf Feb., 2 Kajo Kaji Mch.
Apl. L.E.

[C. & L. coll.] 2 Kamisa Dec. Sen.

[Chr. coll.] 1 Mt. Baginzi, 4 Yambio Mch. B.G.; 2 Yei
Nov. L.E.

This subspecies appears to range westward to the Gold Coast hinterland, but is replaced in the Gold Coast proper and in Senegambia by a smaller race (*P. n. guineensis* Shelley); eastward it ranges to Eritrea and northern Abyssinia and southward to Uganda. A list of the subspecies will be found in Wytsman's 'Genera Avium,' prepared by Hellmayr (p. 23).

Anthoscopus musculus.

Ægithalus musculus Hartl.; Shelley, B. A. ii. p. 254.

[B. coll.] 1 Sheik Tombé, summer, U.N.

Previously obtained by Emin at Lado within our limits.

Anthoscopus punctifrons.

Ægithalus punctifrons Sund.; Shelley, B. A. ii. p. 249.

[B. coll.] 1 Roseires July, 1 Abu Haraz May, Sen.

[C. & L. coll.] 3 Kamisa Dec. Sen.; 1 White Nile
lat. 14° N. Jan., 1 Lake No Feb. U.N.

This Tit was obtained by Mr. Charles Rothschild, and also by Messrs. Witherby and Hawker and Dunn on the White and Blue Niles, and extends westward to Lake Chad; but there is no evidence that it occurs in Abyssinia, though called the Abyssinian Penduline Tit by Shelley.

Anthoscopus parvulus.

Ægithalus parvulus Heugl.; Shelley, B. A. ii. p. 250.

[B. coll.] 1 Rejaf Apl. L.E.

A rare bird previously obtained by Emin at Rejaf and at Kiri; also by Alexander on the Bamingui river, a tributary of the Shari river, near Lake Chad. Heuglin's types came from the Bahr el Ghazal.

Family LANIIDÆ.

Corvinella corvina affinis.

Corvinella affinis Heugl. Orn. Nordost-Afr. 1871, p. 48 :
Upper Nile.

Corvinella corvina apud Butler, Ibis, 1908, p. 225, 1909,
p. 80.

[B. coll.] 1 Katta, 1 Ukanda Jan., 2 Chak Chak Feb.
Mch., 2 Wau, 1 Khor Gitti Mch. B.G. ; 1 Mongalla,
summer.

[Chr. coll.] 1 Mt. Baginzi Mch., 2 Wau July-Aug.
B.G. ; 2 Yei Nov. L.E.

The races of this bird appear to be :—

C. c. corvina Shaw : Senegal.

C. c. togoensis Neum. : rest of N.W. Africa.

C. c. affinis Heugl. : Upper Nile, Uganda, and Bahr el
Ghazal.

Lanius minor.

Lanius minor Gm. ; Sclater in Shelley's B. A. v. p. 276.

[B. coll.] 4 Khartoum Aug.-Oct.

August seems a very early date for these birds to be on
migration. This species seems to be uncommon in the
Sudan. In fact, we can find no notice of its occurrence
since Heuglin's record, though the Museum possesses one
other example from Sennar.

Butler states, however, that it is widely distributed in
winter from Khartoum to the Lado Enclave.

Lanius excubitor leucopygos.

Lanius leucopygos Hemp. & Ehr. ; Sclater in Shelley's
B. A. v. p. 272.

Lanius leuconotus Brehm ; Butler, Ibis, 1905, p. 327.

[B. coll.] 1 Khartoum Feb. ; 1 Bara Dec. Kor.

[C. & L. coll.] 1 White Nile lat. 14° N. Jan. W.N.

This is the resident form of Grey Shrike in the Nile
valley and regions west to Lake Chad.

Lanius excubitor elegans.

Lanius elegans Swains.; Sclater in Shelley's B. A. v. p. 271.

Lanius leuconotus (non Brehm); Butler, Ibis, 1908, p. 225, 1909, p. 394.

[B. coll.] 1 Jebel Bawati May, R.S.

[C. & L. coll.] 9 Sinkat Mch. Apl. R.S.

Also a resident species of Grey Shrike, replacing *L. e. leucopygos* to the north and extending through Egypt to Tunis. Both Butler and Chapman and Lynes found it breeding in the Red Sea province near Port Sudan.

Lanius excubitor pallidirostris.

Lanius pallidirostris Cassin; Sclater in Shelley's B. A. v. p. 270.

[B. coll.] 1 Wadi Mogileb Nov. Ber.; 2 Jebel Kerbosh Mch., 1 Kamobsana Mch., 1 Jebel Okokreb Mch., 1 Gebeit Mch. R.S.

[C. & L. coll.] 2 Kamisa Dec., 1 20 m. above Sennar Jan. Sen.

A wintering migrant from Transcaspia, where it breeds. Distinguished by the rosy tinge on its breast and by its pale bill.

Lanius excubitor aucheri.

Lanius aucheri Bonaparte; Sclater in Shelley's B. A. v. p. 268.

[B. coll.] 1 Bir Nurayet Nov., 1 Wadi Huriyeb Nov. Ber.

[C. & L. coll.] 1 Port Sudan Dec., 2 Sinkat Mch. R.S.

This species breeds in Persia and perhaps in Arabia; it also winters in north-east Africa. It is darker on the back, has a black bill, and the under parts washed with grey rather than rosy, as compared with *L. e. pallidirostris*.

Phoneus senator niloticus.

Phoneus niloticus (Bonaparte); Sclater in Shelley's B. A. v. p. 287.

Lanius paradoxus apud Butler, Ibis, 1905, p. 328, 1908, p. 226, 1909, p. 80 (part).

[B. coll.] 1 Jebel Kerbosh Mch. R.S. ; 1 Kamlin Mch. B.N. ; 2 Disa Apl. Sen. ; 1 Renk Jan. U.N. ; 1 Gadein Jan. ; 1 Ayum, 3 Raffali Feb., 1 Moyen Apl. B.G.

[C. & L. coll.] 1 Sinkat Mch. R.S. ; 1 Kamisa, 1 Singa, 1 Eneikliba Dec. Sen. ; 1 Renk Mch. U.N.

[Chr. coll.] 1 Meridi Jan. B.G.

Phoneus senator senator.

Phoneus senator (Linn.) ; Sclater in Shelley's B. A. v. p. 289.

Lanius paradoxus Brehm ; Butler, Ibis, 1909, p. 80 (part.).

[B. coll.] 1 Raffali Feb. B.G.

This seems to be the first record for the Sudan, although it has been taken at Heluan in Egypt, and also in Tripoli and Tunis. Its usual winter-quarters are in West Africa.

Fiscus nubicus.

Fiscus nubicus (Licht.) ; Sclater in Shelley's B. A. v. p. 244.

Lanius nubicus Butler, Ibis, 1905, p. 328, 1908, p. 225, 1909, pp. 80, 394.

[B. coll.] 1 Erkowit Mch. R.S. ; 1 Blue Nile ; 3 Khar-toum Jan. Oct. ; 1 Jebelein Nov., 1 Hillet Abbas Dec., 2 Kosti Jan. W.N. ; 2 near Renk Dec. Jan. U.N.

[C. & L. coll.] 1 Sinkat Mch. R.S. ; 1 Singa, 2 Sennar, 1 Kamisa Dec. Sen. ; 1 near Jebelein Jan. W.N.

Fiscus collaris smithi.

Fiscus smithi (Fraser) ; Sclater in Shelley's B. A. v. p. 252.

[Chr. coll.] 5 Yei Nov. Dec. L.E.

Smith's Fiscal Shrike is a West African form extending eastwards to the Lado, where it was first obtained by Emin. These birds are certainly nearer *F. c. smithi* than *F. c. humeralis*, which is found in Abyssinia.

Fiscus excubitorius princeps.

Fiscus excubitorius princeps (Cab.); Slater in Shelley's B. A. v. p. 265.

Fiscus excubitorius Butler, Ibis, 1905, p. 327, 1908, p. 225, 1909, p. 80.

[B. coll.] 1 Taufikia Mch. U.N.; 1 Mongalla summer;
1 Atwot, 1 near Rumbek Jan., 1 Chak Chak Feb.,
3 Doleiba May, B.G.

[C. & L. coll.] 2 south of Jebelein Jan. W.N.; 1 White Nile lat. $10\frac{1}{2}^{\circ}$ N. Jan. U.N.

The birds from Ruwenzori identified by Ogilvie-Grant as *F. intercedens* Neum. appear to be identical with this race, whose range extends from the White Nile valley to Uganda.

Enneoctonus collurio.

Enneoctonus collurio (Linn.); Slater in Shelley's B. A. v. p. 281.

Lanius collurio Butler, Ibis, 1905, p. 328.

[B. coll.] 6 Khartoum Aug.-Oct.

The earliest date is the 13th of August—a young bird, but, of course, fully fledged; others from the 23rd onwards. These dates seem early for winter visitors, but it must be remembered that the Red-backed Shrike leaves its breeding-places rather early.

Enneoctonus gubernator gubernator.

Enneoctonus gubernator (Hartl.); Slater in Shelley's B. A. v. p. 285.

[Chr. coll.] 5 Yei Nov. Dec. L.E.

A Shrike obtained by Alexander near Lake Chad has a much paler grey head and appears to be referable to *E. g. strümpelli* Reichw. from the interior of Cameroon. But the birds from the Gold Coast hinterland appear to be indistinguishable from those of the upper Nile, although the paler form intervenes as far as locality is concerned.

Otomela cristata isabellina.

Otomela isabellina (Hempr. & Ehr.); Sclater in Shelley's B. A. v. p. 293.

Lanius isabellinus Butler, Ibis, 1909, p. 394.

[B. coll.] 2 Erkowit Mch. Apl., 1 Port Sudan Apl.,
1 Khor Arbat May R.S.; 1 Shendi Mch. Ber.;
3 Mongalla summer; 1 Lado Feb.

[C. & L. coll.] 1 Port Sudan Dec. R.S.; 3 White Nile
lat. $9\frac{1}{2}^{\circ}$ – 12° N., 1 Kosti Jan. W.N.; 1 Tonga,
1 mouth of Bahr el Zeraf, 1 Lake No Feb. U.N.

Otomela cristata phœnicuroides.

Otomela phœnicuroides (Severzow); Sclater in Shelley's B. A. v. p. 295.

Lanius isabellinus (nec H. & E.); Butler, Ibis, 1908, p. 226 (part.).

[B. coll.] 2 Khartoum Feb.; 1 Kenisa Feb. Mon.

These two forms of *O. cristata* are somewhat difficult to distinguish, and some birds are doubtless intermediate. The breeding-ranges of both are in western Asia and they only occur in Africa in winter. The present subspecies has not previously been definitely recorded from the Sudan, and Mr. Butler did not distinguish it from the common *O. c. isabellina*.

Malaconotus poliocephalus catharoxanthus.

Malaconotus poliocephalus catharoxanthus Neum.; Sclater in Shelley's B. A. v. p. 407.

Malaconotus poliocephalus apud Butler, Ibis, 1905, p. 329.

Laniarius catharoxanthus Butler, Ibis, 1908, p. 226, 1909, p. 81.

[B. coll.] 1 Gallabat May, Kas.; 1 Wau, 1 near Rumbek
Jan., 1 Chak Chak Feb., 1 Kuanga's, 1 Tembura
Mch. B.G.; 1 near Rejaf Apl. L.E.

[Chr. coll.] 3 Meridi Jan. Feb., 1 Mt. Baginzi, 7
Yambio Mch. B.G.

The birds from the Bahr el Ghazal show an approach to the typical form from West Africa, and are not so pale as those from Abyssinia and the Blue Nile districts. It is, therefore, unfortunate that Neumann described this form from the Bahr el Ghazal and not from the paler Abyssinian bird.

A young fledgling from Yambio with the tail just sprouting resembles the adult in colour, but is paler above and below and the grey of the head not so clear.

***Chlorophoneus sulfureopectus*.**

Chlorophoneus sulfureopectus (Lesson); Selater in Shelley's B. A. v. p. 427.

Laniarius sulphureipectus Butler, Ibis, 1908, p. 227, 1909, p. 81.

[B. coll.] 2 Roseires July Sept. Sen.; 1 Bringi's, 1 Raffali, 1 Kojali Feb., 1 Tembura, 1 Wau Mch. B.G.; 6 Mongalla Jan.; 2 Lado Feb.

[Chr. coll.] 6 Meridi Jan. Feb., 6 Yambio Mch., 1 Wau July-Aug. B.G.

It seems very doubtful if it is possible to distinguish any racial forms of the Orange-breasted Bush-Shrike. *C. s. similis* was considered distinct in Shelley's 'Birds of Africa,' but even in this case it was remarked that it was not always distinguishable from the West African typical form, and the examination of the very large series now in the British Museum only confirms us in this belief.

***Rhodophoneus cruentus cruentus*.**

Rhodophoneus cruentus (Hempr. & Ehr.); Selater in Shelley's B. A. v. p. 392; Butler, Ibis, 1908, p. 227, 1909, p. 394.

[B. coll.] 3 Erkowit Mch., 1 Port Sudan May, 3 Jebel Okokreb Mch., 1 Jebel Karbush Mch., 2 Gebeit Mch. R.S.

[C. & L. coll.] 4 Sinkat Mch., 1 Port Sudan April, R.S.

Rhodophoneus cruentus kordofanicus, subsp. nov.

Three Rosy-patched Shrikes, two males and one female, collected by Capt. W. H. Dunn, at Ogayeh Wells, in western Kordofan, on 13 November 1902, are very much paler than the typical race from the Red Sea littoral, and certainly deserve recognition as a distinct race.

The colour of the upper side is very pale brownish grey as opposed to the pale brown of the typical race; this is also the case with the region of the face behind the eye, which, except that the ear-coverts are slightly tinged with brownish, is almost entirely white. The measurements are apparently identical. Measurements: ♂ wing, 95; ♀, 90 mm.

Types as above: ♂, B.M. reg. no. 1903/2/4/5; ♀, 1903/2/4/3.

Laniarius æthiopicus æthiopicus.

Laniarius æthiopicus (Gmel.); Sclater in Shelley's B. A. v. p. 312; Butler, Ibis, 1905, p. 329.

[B. coll.] 1 Gallabat May, Kas.

Laniarius æthiopicus major.

Laniarius major (Hartl.); Sclater in Shelley's B. A. v. p. 306.

Laniarius æthiopicus (non Gmel.); Butler, Ibis, 1908, p. 226, 1909, p. 80.

[B. coll.] 1 Wau Jan., 3 Raffali Feb. B.G.

[Chr. coll.] 5 Meridi Jan. Feb., 2 Yambio Mch., 1 Wau July-Aug. B.G.; 2 Yei Dec. L.E.

The Boubou Shrike of the Bahr el Ghazal can at once be distinguished from that of Kassala by the presence of a white edging to the secondaries.

The Boubou Shrike forms a well-defined group of subspecies with fairly clearly marked characteristics.

An examination of the specimens in the British Museum leads us to the following conclusions as to the races:—

L. Æ. ÆTHIOPICUS (Gmel.). White of the wing extending over the primary and secondary coverts; no white on the secondaries.

Range. Abyssinia north to Kassala and Eritrea, south to Shoa and Somaliland.

L. Æ. AMBIGUUS (Mad.). White on the wing confined to the primary coverts. Size generally smaller, wing about 90 mm.

Range. East Africa between the coast-belt and the Rift valley.

L. Æ. SUBLACTEUS (Cass.). No white on the wing; smaller, wing about 78 mm.

Range. Coast-belt of East Africa from Lamu to Dar-es-Salam.

L. Æ. MOSSAMBICUS (Reichw.). Wing with white on the inner secondaries as well as the coverts. Wing about 90 mm.

Range. Mozambique, Nyasaland, and Rhodesia to about the region of the Victoria Falls.

L. Æ. GUTTATUS (Hartl.). Like *mossambicus*, but pure white on the underparts.

Range. Angola east to Lake Ngami and the Victoria Falls region.

L. Æ. BICOLOR (Hartl.). Like *guttatus*, but no white on the inner secondaries.

Range. Gaboon.

L. Æ. MAJOR (Hartl.). With white on the coverts and secondaries; like *mossambicus*, but larger. Wing about 100 mm.

Range. West Africa south to Cameroon, east to Uganda, East Africa, west of the Rift valley and the Bahr el Ghazal.

L. Æ. TURATHI (Verr.). No white on the wing, and larger than the east coast *sublacteus*—about 105 mm.

Range. Portuguese Guinea and probably Senegal.

We have no specimens from the type-locality of *L. æ. somaliensis* Reichw. from S. Somaliland, and so cannot state whether the smaller size is constant.

Laniarius erythrogaster.

Laniarius erythrogaster (Cretzschm.); Selater in Shelley's B. A. v. p. 325; Butler, Ibis, 1905, p. 329, 1908, p. 227, 1909, p. 81.

[B. coll.] 1 Gallabat May, Kas; Renk Mch., Jebel Ahmed Aga Feb., Taufikia Feb., Lake No June, U.N.; Chak Chak Feb., Atwot Jan, Wau Mch. B.G.; 2 Mongalla.

[C. & L. coll.] 2 Kamisa Dec. Sen.; 1 nr. Lake No, Feb. U.N.

[Chr. coll.] 2 Wau July-Aug. B.G.

A common species.

Dryoscopus gambensis malzacii.

Dryoscopus malzacii (Heugl.); Selater in Shelley's B. A. v. p. 346 (part); Butler, Ibis, 1908, p. 226, 1909, p. 81.

[B. coll.] 1 Ukanda Jan., 3 Chak Chak Feb. Mch., 1 Tembura, 1 Kojali Mch. B.G.; 1 Mongalla Feb.; 3 Lado, 2 Rejaf Feb. L.E.

[Chr. coll.] 5 Meridi Jan. Feb., 2 Yambio, 3 Mt. Baginzi Mch., 4 Wau July Aug. B.G.

Dryoscopus gambensis erythreæ.

Dryoscopus malzacii erythreæ Neumann, J. f. O. 1899, p. 412: Salamona, Eritrea.

[B. coll.] 4 Roseires July Aug., 1 Jebel Fazogli May, Sen.

[C. & L. coll.] 1 Kamisa Dec. Sen.

We have examined the material in the British Museum of the forms of *D. gambensis*. Our conclusions only differ from those arrived at by the senior author in his revision of the group in the fifth volume of Shelley in regarding the Abyssinian and Blue Nile forms as distinct from that of the White Nile valley and westwards. We regard *Dryoscopus angolensis* and *D. cubla* each with several races as forming quite distinct groups. The races of *D. gambensis* can only

be satisfactorily determined on the females, and are as follows:—

1. *D. G. ERYTHRÆ* Neum. (see above).

Female with an almost black back and the under surface almost white faintly washed with yellow.

Range. Abyssinia westwards to Sennar and the Sobat river.

2. *D. G. NYANZÆ* Neumann : Kavirondo.

Female like *D. g. erythræ*, but back not black but brownish, underparts tawny ochraceous.

Range. Uganda and British East Africa west of the Rift valley.

3. *D. G. MALZACII* (Heugl.) : White Nile.

Female with the back dark ashy grey (lighter than *D. g. nyanzæ*) and the underparts more tawny.

Range. Upper White Nile valley west through the Bahr el Ghazal to the Shari river region and Lake Chad.

4. *D. G. GAMBENSIS* (Licht.) : Senegambia.

Female with the back earthy-brown with a contrasting ashy-grey head; below tawny orange.

Range. Senegal to North Nigeria.

5. *D. G. CONGICUS* Sharpe : Condé, Gaboon.

Female with the head dark slaty strongly contrasting with the earthy-brown back; below strongly washed with rich rufous tawny, especially on the chest.

Range. Portuguese Congo, probably ranging north into Gaboon.

Tschagra senegala senegala.

Tschagra senegala (Linn.) ; Sclater in Shelley's B. A. v. p. 362.

Telephonus senegalus (Linn.) ; Butler, Ibis, 1909, p. 81.

[B. coll.] 1 nr. Pongo river Feb., 1 Tembura Mch. B.G.

[Chr. coll.] 2 Tembura Apl., 4 Meridi Jan. Feb. B.G. ;

3 Yei Nov. L.E.

We still maintain that it is impossible to recognize any satisfactory races of this Shrike from south, west, or east Africa. There is a certain amount of variation in the depth of tone of the colour of the back; the darkest birds are found in Angola, Belgian Congo and Uganda, and the tropical coast-belt of British East Africa, while lighter-coloured birds are found from Senegal to Northern Nigeria, Bahr el Ghazal, and north and central East Africa. The birds from South Africa are also of the paler type, but there is much variation individually, and possibly races may be in the process of formation, but we propose to leave them united for the present.

***Tschagra senegala sudanensis*, subsp. n.**

[B. coll.] 2 Roseires July, 1 Famaka May, **Sen.**; 1 Bahr el Zeraf Jan., 1 Khor Filus June, **U.N.**; 1 Shambé Dec., 3 Bor, 1 Abu Kika May, **Mon.**

[C. & L. coll.] 1 nr. Tonga Feb., 2 White Nile lat. $9\frac{1}{2}^{\circ}$ N. Feb., 1 mouth of Zeraf river Feb., 1 Lake No Mch. **U.N.**

The discrimination of the races of the Tschagra Shrikes of north-eastern Africa have caused us a good deal of trouble. There is a very good series in the British Museum, and we have after considerable hesitation decided that three races should probably be recognized, and that Neumann's name *T. s. erlangeri* cannot be used for the Sudanese bird. We are therefore compelled to find a new name for the form. The following is a brief synopsis of the races from this part of Africa:—

TSCHAGRA SENEGALA HABESSINICA (Hempr. & Ehr.): Abyssinian coast-lands.

We regard *Laniarius blanfordi* Sharpe as a synonym. A smaller race, wing averaging 78 mm. Colour of the back distinctly brown, often tinged with rufous; below grey, sometimes a slight wash of olive, but never any rufous.

Range. The northern districts of Abyssinia and Eritrea,

T. s. ERLANGERI (Neum.) : Abaja Lake.

A slightly larger race with wing averaging 82 mm. Colour of the back very close to *T. s. habessinica*, but with a slightly lighter region on the nape contrasting with the darker back; below with a distinct tinge of rusty brown, not pure grey.

Range. The southernmost part of Abyssinia from Lake Abaja to Lake Rudolf east to the Kullo countries (see map, Ibis, 1913, pl. xii.).

T. s. SUDANENSIS, subsp. nov.

Differs from both *T. s. habessinica* and *T. s. erlangeri* in having the back a greyer shade of brown and at once distinguishable if a series is examined. Below always a clear grey without any olive or brownish. Size large, wing averaging 85 mm.

Type, a male, Mongalla, Sudan (coll. A. L. Butler), July–Sept. 1908, B.M. reg. no. 1915/12/24/1357. Wing 91 mm.

Range. This race is found throughout the central districts of Abyssinia from the region about Lake Tsana south to Lake Zwai, and westwards to Sennar and the White Nile. Birds from the Harrar district to the east of Adis Ababa and Lake Zwai are intermediate and approach *T. s. habessinica*. Those from Lake Zwai southwards are nearer to *T. s. erlangeri*.

Neumann doubtless intended to include this form in his *T. s. erlangeri*, but when the large Abyssinian series of skins in the British Museum are spread out it is at once evident that the birds from the southern lake-districts, whence came the Neumann type, can be distinguished from those of the highlands of Shoa, and that the Sudanese birds agree with these last.

Tschagra senegala remigialis.

Tschagra remigialis (Finsch & Hartl.); Slater in Shelley's B. A. v. p. 369.

Telephonus remigialis Butler, Ibis, 1905, p. 329.

[B. coll.] 1 Shendi Mch. Ber.; 1 Wad Medani, Apl. B.N.; 1 Khartoum Mch.; 3 Renk Jan. Feb. Mch. U.N.

[C. & L. coll.] 4 Kamisa, 1 Sennar, 1 Eneikliba Dec. Sen.; 2 White Nile Jan. Mch.

We have treated this bird as a subspecies of *Tschagra senegala*, but it is such a sharply defined form that it will in all probability prove to be a distinct, though representative, species.

***Tschagra australis emini*.**

Tschagra australis emini (Reichw.); Selater in Shelley's B. A. v. p. 374.

[Chr. coll.] 1 Meridi Feb. B.G.

No form of *T. australis* has hitherto, so far as we are aware, been noticed in the Sudan, though Alexander obtained an example at Mobhai on the Ubangi river to the west and Jackson at Entebbe to the south. The Meridi bird has a somewhat lighter crown than examples from Uganda, but as it is only a single specimen we would not propose to give it a name.

***Antichromus minutus minutus*.**

Antichromus minutus (Hartl.); Selater in Shelley's B. A. v. p. 387.

Telephonus minor apud Butler, Ibis, 1908, p. 227.

[B. coll.] 1 Bahr el Jebel Mch., 1 Bor Feb. Mon.; 1 Rejaf, 1 Kaia R. Feb. L.E.

[C. & L. coll.] 1 Lake No, 2 White Nile lat. $9\frac{1}{2}^{\circ}$ N. Feb. U.N.

[Chr. coll.] 3 Meridi Jan. Feb., 1 Yambio Mch., 1 Yei Nov. L.E.

***Nicator chloris chloris*.**

Lanius chloris Valenc. Dict. Sci. Nat. xl. 1826, p. 226 : Yalam, Senegal.

Nicator chloris (Valenc.) Selater in Shelley's B. A. v. p. 436.

[Chr. coll.] 3 Yambio Mch. B.G.

This species is new to the Bahr el Ghazal; it was previously known to range to Uganda and the Welle river.

Nilaus afer *afer*.

Nilaus afer (Lath.); Slater in Shelley's B. A. v. p. 456; Butler, Ibis, 1905, p. 329, 1908, p. 226, 1909, p. 80.

[B. coll.] 3 Roseires Aug. Sept. Sen.; 2 nr. Fatasha Jan. Kh.; 1 Jebel Melbis Apl. Kor.; 1 Khor Filus June, U.N.; 4 Mongalla Jan. and summer, 6 Sheik Tombé summer, Mon.; 1 Moyen Jan., 1 Chak Chak Feb., 2 Wau Apl. B.G.

[C. & L. coll.] 1 Singa, 6 Kamisa Dec., 1 nr. Sennar Jan. Sen.; 1 Kosti Jan. W.N.; 1 nr. Lake No Feb. U.N.

[Chr. coll.] 1 Meridi Feb., 2 Yambio Mch., 1 Wau July-Aug. B.G.

Family PRIONOPIDÆ.

Eurocephalus rüppelli rüppelli.

Eurocephalus rueppelli Bp.; Slater in Shelley's B. A. v. p. 447.

[B. coll.] 9 Mongalla July-Sept.

In the J. f. O. 1915, pp. 46-50, Count Zedlitz gives an interesting review of the races of this Shrike. We ourselves are inclined, however, to consider *E. anguitimens* as specifically distinct.

As regards the northern forms, *E. r. rüppelli* from the upper White Nile is distinguished by its somewhat—at certain times of year considerably—paler upper parts and at all times by the small amount and paleness of the brown on the underside.

E. r. erlangeri from Abyssinia and northern Somaliland is distinguished by its darker upper parts and the larger and darker brown marks on the underside.

E. r. böhmi from western German East Africa and Lake Nyasa is considerably paler on the back, more like *E. r.*

rüppelli, but is duskier below and slightly larger. Wing averages 131 against 127 mm.

We cannot, even with the large series before us, appreciate the other two races, *E. r. deckeni* from southern Somali to Voi and *E. r. fischeri* from the rest of East Africa. The coloration seems to vary considerably with the time of year, and the size is also not a reliable guide. For instance, in the series collected by Butler in the summer, nearly all the examples are paler than those collected by Emin in March, and the wing-measurements, which Zedlitz gives as 119–126 mm. for the race, are actually 122, 125, 127, 127, 127, 127, 128, 129, 130. We therefore consider that *E. r. rüppelli* ranges from Mougalla through British East Africa, and from Victoria Nyanza to the mouth of the Tana river to the eastern half of German East Africa. On higher ground—as, for instance, near Kilimanjaro and Kenia—the birds have a tendency to be slightly larger and darker. We have not been able to examine specimens from southern Somaliland itself, but the Tana river birds seem indistinguishable from the Nile race.

Count Zedlitz gives reasons for fixing the type-locality of *E. rüppelli* as “White Nile,” rather than Shoa, which we accept.

***Prionops concinnata*.**

Prionops concinnata Sundev.; Selater in Shelley's B. A. v. p. 483.

[B. coll.] 1 Gallabat Apl. Kas.; 5 Roseires Aug. Sept.,
1 Disa Aug. Sen.; 1 Katta Jan., 1 Khor Gitti Jan.,
1 Moyen Apl., 1 nr. Rumbek Jan. B.G.

[C. & L. coll.] 2 Kamisa Dec. Sen.

[Chr. coll.] 3 Yambio Mch., 4 Mt. Baginzi Mch. B.G.;
5 Yei Nov. L.E.

On the whole, we consider it best to keep this as a distinct species, and not as a subspecies of *P. cristata* as has been suggested by Neumann. We can find no difference between the Roseires and Bahr el Ghazal examples.

Family SYLVIIDÆ.

Agrobates galactotes galactotes.

Agrobates galactotes galactotes (Temm.) ; Hartert, Vög. pal. Faun. p. 603.

Aedon galactodes Butler, Ibis, 1905, p. 336, 1908, p. 231.

[B. coll.] 1 Erkowit Mch. R.S. ; 1 Gedaref Apl. Kas. ;
5 Khartoum Apl. May.

[C. & L. coll.] 2 Kamisa Dec. Sen.

Agrobates galactotes minor.

Agrobates galactotes minor (Cab.) ; Hartert, Vög. pal. Faun. p. 606.

Aedon galactodes apud Butler, Ibis, 1909, p. 397.

[B. coll.] 1 Khor Arbat May, 2 Erkowit Mch., 1 Jebel Okokreb Mch. R.S. ; 1 Ein-el-Lueiga on the Rahad river May, B.N.

[C. & L. coll.] 2 Sinkat Mch. R.S. ; 2 Kamisa Dec.,
1 Singa Dec. Sen.

There are undoubtedly two distinct races of the Rufous Warbler in the Sudan, the larger typical *A. g. galactotes*, which is a winter migrant only, and the smaller *A. g. minor*, a resident form in northern Abyssinia and Somaliland, and the Sudan westwards to Northern Nigeria and the Gold Coast hinterland.

From the latter locality Alexander described his *Sylvia oliviæ*, Bull. B. O. C. xxiii. 1908, p. 15, which is a synonym.

The measurements of the wings of the two forms are as follows :—

A. g. galactotes: ♂ 88, 90 ; ♀ 85, 85, 85, 84, 84, 84.

A. g. minor: ♂ 83, 83, 82, 82, 82, 82, 82, 80, 80, 80, 78 ;
♀ 78, 78, 79.

The measurements, as will be seen, are remarkably constant and afford an easy method of separation.

Mr. Butler did not distinguish between the two forms of the Rufous Warbler, but he found the smaller one breeding at Khor Arbat on 13 May.

Locustella luscinioides luscinioides.

Locustella luscinioides luscinioides (Savi) ; Hartert, Vög. pal. Faun. p. 548.

[B. coll.] 1 Khartoum Mch.

A single example of this species dated 15 March, 1908, is the first definite record of the occurrence of this species in the Sudan. Shelley states it is a resident in Egypt, whence there are three examples in the British Museum, but the present example is the most southerly record yet available.

Acrocephalus arundinaceus arundinaceus.

Acrocephalus arundinaceus arundinaceus (Linn.) ; Hartert, Vög. pal. Faun. p. 556.

Acrocephalus turdoides Butler, Ibis, 1905, p. 334.

[B. coll.] 4 Khartoum Oct.

Acrocephalus scirpaceus scirpaceus.

Turdus scirpaceus Hermann, Observ. Zool. 1804, p. 202 : Alsace.

Acrocephalus streperus (Vieill.) et auct. ; Butler, Ibis, 1905, p. 334, 1909, p. 395.

[B. coll.] 1 Gedaref May, Kas. ; 13 Khartoum Mch. & Apl.

[C. & L. coll.] 1 Erkowit Apl. R.S. ; 5 White Nile lat. $13\frac{3}{4}^{\circ}$ N.— $14\frac{3}{4}^{\circ}$ N. Jan. ; 1 near Lake No Feb. U.N.

Widely distributed in winter time (*A. L. B.*).

Acrocephalus schænobæus.

Motacilla schænobæus Linn. Syst. Nat. 1758, p. 184 : S. Sweden.

Acrocephalus schænobæus (Linn.) ; Hartert, Vög. pal. Faun. p. 566.

Acrocephalus phragmitis Butler, Ibis, 1905, p. 334, 1908, p. 231.

[B. coll.] 8 Mongalla Oct.

Acrocephalus agricola agricola.

Acrocephalus agricola agricola Jerdon; Hartert, Vög. pal. Faun. p. 564.

[C. & L. coll.] 1 White Nile lat. $9\frac{1}{2}^{\circ}$ N. long. 31° E. Feb.

This little Warbler does not seem to have been noticed previously in Africa or Arabia, but as it breeds in the Crimea, south-east Russia and eastwards to the Himalaya, and winters in India, it is not unnatural to find it occasionally visiting the Nile valley in winter. It is very like *A. baticatus* from south of the Zambesi, but is rather smaller and more rufous in coloration. In J. f. O. 1880, p. 212, Hartlaub described a bird collected at Lado by Emin under the name *Acrocephalus albоторquatus*. Subsequently he submitted the specimen to Seebohm, who identified it as a partial albino of the South African *A. baticatus*. There can be little doubt in our minds that it is really *A. agricola*, especially as the wing is given as 55 mm., which is a good deal less than the usual measurement of *A. baticatus*.

Since writing the above we have found in the British Museum three unidentified Warblers collected by Boyd Alexander, a female at Lake Chad on 11 March and a pair at Fort Archambault on the Shari river on 21 July. We cannot distinguish these birds from *A. a. agricola*. It therefore appears that a bird indistinguishable from *A. a. agricola* breeds in western Africa, and we must leave the explanation of the problem to the future.

Acrocephalus palustris.

Acrocephalus palustris (Bechst.); Hartert, Vög. pal. Faun. p. 562.

Witherby (Ibis, 1901, p. 257) obtained a Marsh-Warbler at Shebesha, a few miles north of El Duem, White Nile Province, on 23 April, 1900, but there are no Sudanese examples in the British Museum.

This bird winters in tropical Africa as far south as Natal.

Acrocephalus stentoreus stentoreus.

Curruca stentorea Hemprich & Ehrenberg, Symb. Phys. Aves, 1833, fol. 66 : Damietta, Egypt.

Acrocephalus stentorea stentorea (H. & E.); Hartert, Vög. pal. Faun. p. 559.

Dr. Hartert states that this bird was obtained by Brehm on the Blue Nile, 24 December, 1850. There are Egyptian but no Sudanese examples in the Museum collections.

Heliolais erythroptera erythroptera.

Drymoica erythroptera Jardine, Contr. Orn. 1849, p. 15 : West Africa.

Heliolais erythroptera (Jard.); Reichw. Vög. Afr. iii. p. 570.

Orthotomus erythropterus Butler, Ibis, 1909, p. 82.

[B. coll.] 1 Wau Mch. B.G.

[Chr. coll.] 1 Meridi Feb. B.G.

I shot a male at Kajo Kaji L.E. 27 Mch. 1915 ; it is now in the Gordon College Museum at Khartoum. A rare bird. (*A. L. B.*)

Melocichla mentalis amaouroura.

Argya amaouroura Pelz. Verh. zool.-bot. Ges. Wien, xxxii. 1883, p. 503 : Fadibek, Upper White Nile, E. of Nimule.

Melocichla mentalis Butler, Ibis, 1908, p. 230, 1909, p. 82.

[B. coll.] 5 near Chak Chak, 1 Tembura Mch. B.G. ;

1 Bor May, Mon. ; 1 Kajo Kaji, 2 Rejaf, Apl. L.E.

[Chr. coll.] 1 Tembura, 1 Meridi Mch. B.G.

The races of this bird appear to be—

1. *M. m. mentalis* (Fraser).

West Africa from the Gold Coast to N. Angola.

2. *M. m. orientalis* Sharpe.

Nyasaland and German East Africa north to Ukamba.

3. *M. m. amaouroura* Pelz.

Uganda, western British East Africa, White Nile, Bahr el Ghazal, and S. Abyssinia.

Of these *M. m. amauroura* seems to us a very poorly defined race. In quite fresh specimens the colour of the tail is undoubtedly darker than in West African examples, but when the plumage is at all worn or faded this distinction disappears. Neumann remarks (J. f. O. 1906, p. 264) that some of the birds from north of the Victoria Nyanza seem to partake of the characters of all three races. This is borne out also by the series before us with the exception that we have none resembling *M. m. orientalis*.

Of the two birds collected by Dr. Christy, the Tembura bird might be typical *M. m. mentalis*, and the Meridi bird *M. m. amauroura*, while some of the more worn specimens collected by Butler are considerably lighter than the average *M. m. mentalis*.

Another race, *M. m. adamaue*, has been described by Reichenow (O. M. xviii. 1910, p. 173) from the interior of Cameroon. Of this we possess no examples and can give no opinion as to its validity. From Angola Bocage (Journ. Sci. Lisbon, viii. 1880, p. 56) described his *Drymoica grandis*. We have examined the series collected by Dr. Ansorge in that country and can find no distinction between them and *M. m. mentalis*.

Cisticola natalensis malzacii. (Pl. X. figs. 3, 4.)

Drymoica malzacii Heuglin, SB. Akad. Wien, xix. 1856, p. 274: [White Nile between 7° & 9° N.E.] (nom. nud.); id. Ibis, 1869, p. 100 [first descript.].

Cisticola strangii apud Butler, Ibis, 1909, p. 82.

[B. coll.] 1 Chak Chak Mch., 1 Doleiba May, B.G.;

1 Mongalla; 1 Lado Feb., 1 Kajo Kaji Mch. L.E.

[Chr. coll.] 1 Meridi Feb., 2 Wau July Aug. B.G.

Cisticola natalensis inexpectata.

Cisticola natalensis inexpectata Neumann, J. f. O. 1906, p. 268: Abassi (=Awasa) Lake, S. Abyssinia.

[B. coll.] 2 Disa Apl. Sen.

[C. & L. coll.] 19 White Nile between Renk and the Bahr el Zeraf Jan. Feb.



1-2 *Cisticola lugubris marginata* æst. et hiems.
 3-4 *Cisticola natalensis malzacii* æst. et hiems.
 5 *Cisticola erythrops erythrops*.

6 *Cisticola erythrops roseires*.
 7 *Cisticola terrestris eximia*.
 8-11 *Cisticola rufocephalus scotoptera* æst. et hiems

The birds from the Nile above the sudd and from Bahr el Ghazal match exactly one in the Museum from Gondokoro collected by G. Blaine, and this has been compared by Selater with Heuglin's type of *D. malzacii* now in the Vienna Museum, which was courteously sent to him for examination some years ago. It is somewhat intermediate between *C. n. inexpectata* and *C. n. strangei* of West Africa, but until a general revision of the Grass-Warblers is carried out it may be allowed to stand.

The birds from the White Nile below Lake No and those from the Blue Nile are slightly paler and less reddish, and can be easily distinguished from West African birds. They agree very well with a toptype of *C. n. inexpectata* of Neumann collected near Lake Zwai by Zaphiro, except that they are slightly inferior in size, the wings of males in winter averaging 72 mm. against 75 mm. in the Abyssinian bird.

Both these subspecies have a marked seasonal change of dress (Pl. X. figs. 3, 4). The winter birds have backs strongly striped dusky and fulvous, and longer tails averaging 65 mm.; the summer birds have the edges of the feathers grey not fulvous, and the stripes are less defined; tail 55 mm.

Cisticola lugubris marginata. (Pl. X. figs. 1, 2.)

Drymoica marginalis Heuglin, SB. Akad. Wien, xix. 1856, p. 274 [nom. nud.]: Bahr el Abiad between 6° and 9° N. lat., i. e. White Nile between Fashoda and Lado.

Drymoica marginata Heuglin, Ibis, 1869, p. 94, pl. i. fig. 1 [founded on above].

Cisticola marginalis Hartlaub, Orn. Centralb. 1881, p. 12; id. Abhandl. nat. Ver. Bremen, vii. 1881, p. 89; Lado (*Emin*) [apparently the same species as Heuglin's redescribed as a new species but under the same name]; Butler, Ibis, 1905, p. 333, 1908, p. 229, 1909, p. 82.

Cisticola blanfordi Hartlaub, Abhandl. nat. Ver. Bremen, viii. Apr. 1883, p. 220 [nom. nov. pro *C. marginalis* Hartl.].

Cisticola hartlaubi Sharpe, Cat. Birds B. M. vii. July 1883, p. 243 [nom. nov. pro *C. marginalis* Hartl.].

[B. coll.] 2 Fashoda Jan. Feb., 2 Malakal May, U.N. ;
 5 Mongalla, 3 Giggling summer, 1 Kenisa Jan. Mon. ;
 1 Chak Chak Feb., 1 Wau Apl. B.G.

[C. & L. coll.] 27 White Nile from Renk to Lake No,
 Jan.—Mch. U.N.

This unfortunate bird has suffered severely at the hands of ornithologists, as can be seen by the synonymy. Hartlaub described it a second time believing it to be new, but unfortunately gave it the same name as that already assigned to it by Heuglin, and subsequently both he and Sharpe finding out the mistake each again christened it afresh.

We feel that the complete elucidation of the *Cisticolas* must be reserved until it is possible to compare all the types in the European museums, and that the matter must be dealt with as a whole. We are therefore merely attempting here to give the correct name to the Sudanese birds.

Selater was able before the war, through the courtesy of the authorities of the Vienna Museum, to examine Heuglin's types of *C. marginalis* or *C. marginata* as he afterwards called it. He found them undoubtedly identical with examples taken by Hawker at Kaka on the White Nile.

This bird has a very distinct seasonal change; those taken at Malakal, Mongalla, and Giggling are in summer (rainy season) dress (Pl. X. fig. 1). The crown is a dusky brown without or with very faint indications of stripes, the back is bluish-leaden colour heavily streaked with black, the tail is shorter (averaging 48 mm. against 58 mm. of birds in winter dress) and is dusky brown without any rufous. The individual feathers are also distinctly wider. The winter birds, on the other hand (Pl. X. fig. 2), have a rufous-brown crown streaked with black. The ground-colour of the back fulvous not leaden, and rich rufous on either side of the black central area along the shafts of the tail-feathers. The wings are similar in both dresses, except that the inner secondaries are margined with rufous in summer instead of dusky; the tail is much longer, as can be seen in the Plate.

We have little doubt that *Cisticola slatini* recently described by Wettstein (Anz. Akad. Wien, 1916, no. 13,

pp. 131-5), from Tonga in the Upper Nile Province, is nothing but *C. l. marginata* in summer dress.

Cisticola cheniana simplex.

Drymæca simplex Heuglin, Ibis, 1869, p. 105 : Bahr el Djebel, *i. e.* Upper White Nile between Lado and Lake No.

Cisticola ladoensis Hartlaub, Abhandl. nat. Ver. Bremen, viii. 1882, p. 189 : Lado.

[B. coll.] 11 Mongalla May-Sept., 1 Bor May, 1 Kenisa Jan. Mon. ; 1 Rejaf Feb. L.E.

[Chr. coll.] 1 Yei Nov. L.E.

These Grass-Warblers from the sudd district of the upper White Nile are undoubtedly identical with a bird collected by Emin at Lado, which we may regard as a co-type of Hartlaub's species. It belongs to the group widely spread over eastern and southern Africa usually placed under the specific name *subruficapilla* or *cheniana*, but we believe that the true *C. subruficapilla* of western Cape Colony is distinct specifically and prefer to use *cheniana*.

Neumann (J. f. O, 1906, p. 267), who has examined the types of Heuglin's *D. simplex*, believes that it is identical with *C. ladoensis* Hartl., and that it was founded on a young female, which accounts for the discrepancy in the wing-measurement, which is given by Heuglin as 1 inch 11 lines, which is approximately 50 mm., the measurement given by Reichenow (Vög. Afr. iii. p. 547). Males in the Butler collection average 65 mm., females 55 mm.

We suspect that *Cisticola subruficapilla borea* Mearns, Smiths. Misc. Coll. lvi. No. 25, 1911, p. 3 : Rhino Camp, Lado Enclave, is a synonym.

Cisticola aridula.

Cisticola aridula Witherby, Bull. B. O. C. xi. 1900, p. 13 : Gerazi, 60 miles S. of Khartoum.

[C. & L. coll.] 6 from $13\frac{3}{4}^{\circ}$ to 15° N. lat. on White Nile Jan. W.N.

Up to the present time the type of Witherby's *C. aridula* has remained unique, with the exception of an example col-

lected at Shendi by Rothschild and Wollaston, so that several writers have considered it to be an abnormal variation. Messrs. Chapman and Lynes have, however, collected a good series of this truly desert form on the banks of the White Nile from about 50 to 100 miles south of Khartoum, and there can be no doubt of the validity and distinctness of the form.

We believe that *Cisticola deserticolor* Wettstein (Anz. Akad. Wien, 1916, no. 13, pp. 131-135), from 20 kilometres N. of El Obeid, will prove to be identical.

As the distribution of this and *C. c. uropygialis* appears to overlap along the White Nile valley and we have not come across any intermediate form, we prefer at present to regard *C. aridula* as a distinct species.

Cisticola rufocephalus rufocephalus.

Maturus rufocephalus Cretzschmar in Rüpp. Atlas, 1826, p. 54, pl. 36 A: Kordofan.

[B. coll.] 1 Jebel Melbis Apl. Kor.

This bird is mentioned by Butler (Ibis, 1905, p. 333) as being much paler than the forms from the Nile valley, and obviously represents the true *M. rufocephalus* of Cretzschmar. There is one other example in the British Museum labelled "Nubia? Dr. Kotschy?"

***Cisticola rufocephalus scotoptera.* (Pl. X. figs 8-11.)**

Drymæca scotoptera Sundevall, Öfv. Ak. Förh. 1850, p. 129: Sennar.

? *Drymæca cinerascens* Heuglin, J. f. O. 1867, p. 296: Sennar.

Cisticola floweri Hartert, Bull. B. O. C. xxvii. 1910, p. 12: Sennar.

Cisticola rufocephalus (part) Butler, Ibis, 1905, p. 333, 1908, p. 229, 1909, p. 82.

[B. coll.] 2 Roseires Apl. Sen.; 1 Taufikia Apl., 1 Fashoda Jan. U.N.; 1 Chak Chak Feb., 1 Moyen May, B.G.; 4 Mongalla summer.

[C. & L. coll.] 3 Singa, 2 Kamisa Dec. Sen.; 14 White Nile from Jebelein to Bahr el Zeraf Jan. Feb.

We find that birds from the upper Nile valley and Sennar are quite distinct from those from Kordofan. They are much darker and more richly coloured and much more heavily striped. For the Kordofan bird we retain the type name; the Sennar and upper Nile bird we refer to Sundevall's *D. scotoptera*. We are of opinion that *C. sudanica* Madarász, Ann. Mus. Nat. Hung. ix. 1911, p. 340: Dinder river, is a synonym.

There is a very distinct seasonal plumage change in these birds, and our series shows this very clearly. The winter birds (Pl. X. fig. 10) have the back boldly striped with black and yellowish and the head a darker rufous obscurely streaked with dusky. The summer birds have the back plain greyish brown (Pl. X. figs. 8, 9), with very faint traces of the darker central stripes to the feathers; the head is much paler rufous, hardly contrasting with the back, and is without streaks, the tail is much shorter (about 45 against 40 mm.), and the feathers rather broader. The April birds (Pl. X. fig. 11) show the intermediate stage very clearly.

The wings of the males measure 53–60 mm., average 56 mm., those of the females 49–52 mm. We are inclined to identify with the summer birds *Drymæca cinerascens* Heuglin, but comparison with the type is desirable.

We have also examined the types of *C. floweri* (Pl. X. fig. 9), now in the Tring Museum, and have satisfied ourselves that this is *C. r. scotoptera* in late summer plumage. The two examples were collected on 28 and 30 July, and the new winter tails are in the case of one bird just sprouting, in the case of the other two-thirds grown. The white outer web to the outer tail-feathers, noted by Hartert as so characteristic a feature, can be easily matched in winter birds, of which we have before us a large series.

Cisticola cisticola uropygialis.

Drymoica uropygialis Fraser, Proc. Zool. Soc. 1843, p. 17: Accra, Gold Coast.

Cisticola cisticola apud Butler, Ibis, 1905, p. 332.

[B. coll.] 1 Shendi Feb. Ber. ; 7 Khartoum Apl. July ;
1 Kawa Nov. W.N. ; 1 Renk May, U.N.

[C. & L. coll.] 12 White Nile between Renk and the
Bahr el Zeraf Jan.—Mch. U.N.

We find these birds identical with the West African form of *C. cisticola*, which again is very close to the typical form from southern Europe. There are other examples in the Museum from Lado (*Emin*) and from the Lake Chad region (*Alexander*), as well as from other localities in West Africa and possibly Uganda, but we find nothing similar from Abyssinia. The seasonal plumage change is not very marked, but the summer birds have the head a dull brown without indication of the striping so characteristic of the winter birds.

Cisticola terrestris eximia. (Pl. X. fig. 7.)

Drymæca eximia Heuglin, Ibis, 1869, p. 106, pl. iii. fig. 1 :
Upper Gazelle river (*i. e.* Bahr el Ghazal).

[C. & L. coll.] 1 Bahr el Zeraf river Feb. U.N.

This bird and another collected by Mr. W. P. Lowe 50 miles south of Gondokoro, 1 March 1913, when with Capt. Cozens, we believe must be identified with the bird described by Heuglin, which is now in the Berlin Museum and inaccessible to us. It is a remarkable bird, not unlike some strongly marked Natal specimens of *C. t. terrestris*, but more richly coloured—the back blacker and the rump redder. The nape, which is quite unstriped, is a dull reddish brown, contrasting somewhat with the brighter red of the rump. We have only found one bird in the Museum which is at all like it. It is one collected at Riru in Northern Nigeria by José Lopez, 4 January, 1912, and presented to the Museum by Capt. Brocklebank. It is slightly larger, the nape and rump are the same bright rufous which is so extended that the black striping of the back is much reduced.

The wings of the Sudan specimens measure, ♂ 47 mm., ♀ 44 mm., that of the Nigerian bird, sexed a male, 51 mm.

Cisticola troglodytes troglodytes.

Drymoica troglodytes Antinori, Cat. descr. Uccelli, Mch. 1864, p. 38: Djur, Bahr el Ghazal.

Cisticola ferruginea apud Butler, Ibis, 1908, p. 230, 1909, p. 82.

[B. coll.] 2 Chak Chak Feb. B.G.; 1 Mongalla Feb., 2 Kenisa summer, Mon.

[C. & L. coll.] 2 White Nile, $9\frac{1}{2}^{\circ}$ N. 31° E. (near Lake No), Feb. U.N.

Cisticola troglodytes ferruginea.

Cisticola ferruginea Heuglin, SB. Akad. Wien, xix. 1856, p. 273: Rahad river, Blue Nile [nom. nud.]; id. J. f. O. 1864, p. 259; Butler, Ibis, 1905, p. 130.

[B. coll.] 4 Roseires Apl. July Aug., 1 Jebel Maba Apl., 1 Fazogli May, Sen.

This rufous-coloured Grass-Warbler is very distinct specifically, but we find that the birds from the upper Blue Nile are subspecifically distinct from those of the upper White Nile and its tributaries. The birds from the first-named district are very much paler on the lower surface, there is a light wash of ferruginous across the chest and along the flanks leaving the throat and middle of the abdomen almost pure white; they are also larger, wing averaging ♂ 52, ♀ 47 mm.

Birds from the upper White Nile, as well as examples from the upper Welle river, collected by Boyd Alexander, are much more richly suffused with ferruginous below the throat and abdomen, never getting so white as the Blue Nile bird. They are also distinctly smaller, wing of ♂ averaging 47, ♀ 43 mm.

As will be seen from the references, Antinori's bird was described from the Bahr el Ghazal and Heuglin's from the Blue Nile, but we are not quite satisfied as to which of the descriptions is the earliest; as the birds are distinct this is a matter of no great moment.

***Cisticola butleri*.**

Cisticola butleri O.-Grant, Bull. B. O. C. xxi. 1907, p. 17 : Chak Chak ; Butler, Ibis, 1905, p. 229.

[B. coll.] 1 Chak Chak Feb. B.G. [Type of the species.]

The type of this species seems unique, there is nothing else quite like it in the Museum. It has a curious long slender bill, and is probably related to *C. sylvia* or *C. erythrops*.

***Cisticola wellsi*.**

Cisticola wellsi O.-Grant, Bull. B. O. C. xxi. 1907, p. 17 : Bahr el Ghazal ; Butler, Ibis, 1905, p. 229.

[B. coll.] 1 ♀ Pongo river Mch. B.G. [type of species] ;
1 ♀ Kajo Kaji, L.E.

Both the known examples of this form are females. The males are probably a good deal bigger, but until a larger series are available it is difficult to say more about it. It resembles generally *C. t. troglodytes*, but has a very much larger and stronger bill.

***Cisticola* sp.**

[Chr. coll.] 1 ♂ Yambio Mch., 1 ♂ Mt. Baginzi Mch. B.G.

We were inclined at first to regard these birds as the males of *C. wellsi*, but they are somewhat different. The Yambio bird, wing 64 mm., has the back a rich rufous-brown of a more chestnut tinge than *C. wellsi*, and a very much larger bill (13 mm. against 11) ; the Mt. Baginzi bird is dusky rather than rufous-brown, but resembles the other specimen in dimensions and form. It is very like a series of birds collected by Alexander on the Welle river which seem to come near *C. emini* and *C. rufopileata*.

***Cisticola petrophila*.**

Cisticola petrophila Alexander, Bull. B. O. C. xix. 1907, p. 104 : Pettu, N. Nigeria.

Cisticola cinerascens (Heugl.) ; Butler, Ibis, 1908, p. 230.

[B. coll.] 1 Doleiba Jan. B.G. ; 1 Kajo Kaji, L.E.

We believe that the bird from Kajo Kaji and the one from Doleiba, which appears to be a juvenile, are identical with *C. petrophila* Alex., a form which should be regarded in our view as a subspecies of the West African *C. rufopileata*. There is a good series of this form in the British Museum from Northern Nigeria and the Welle river, collected by Alexander; a single bird from Tingasi in the Niam-Niam country, collected by Emin, and another labelled Kibusi, Lango, north of Victoria Nile, obtained by G. Blaine.

***Cisticola brachyptera*.**

Drymorca brachyptera Sharpe, Ibis, 1870, p. 476, pl. xxiv. fig. 1 : Volta river, Gold Coast.

[B. coll.] ♀ Chak Chak Mch. B.G.

[C. & L. coll.] ♂ White Nile lat. $9\frac{1}{2}^{\circ}$ N. long. 31° E.
(nr. Lake No), U.N.

We cannot distinguish these birds from *C. brachyptera* described by Sharpe, but subsequently (Cat. Birds, vii. p. 225) identified with *C. rufa* (Fraser). The types of both species are in the Museum, and we believe that they are quite distinct. The two types of *C. brachyptera* are unsexed, but the wings measure 48 and 42 mm. respectively, and they are probably male and female. The Sudan birds measure, ♂ 50, ♀ 44 mm. This species is distinguished by its small size, the head and back brown without any rufous, a slight wash of rufous on the wings, and by the dull ashy (not white) tips to the tail-feathers. It extends to southern Abyssinia and south to Gaboon and Portuguese East Africa, and there are probably several races, but the Sudanese birds appear to be indistinguishable from the West African typical race. The winter birds show distinct but not very heavy stripes on the back, the summer birds are quite plain.

The type of *Cisticola hypoxantha* Hartlaub (P. Z. S. 1880, p. 624 : Magungo, Nile Province of Uganda Protectorate), now at Tring, has been examined by us, and is obviously identical with the form of *C. brachyptera* occurring in the Sudan. It is a young bird with the characteristic bright

yellow wash on the underparts. There is another example, an adult male from Fadjulli in the same district, collected in May by Emin Pasha, also in the Tring Museum.

C. rufa is found in West Africa from the Welle river to the Cameroon, and perhaps Angola, is a reddish bird as its name implies, and appears to be always without striping on the back.

Cisticola erythrops erythrops. (Pl. X. fig. 5.)

Drymæca erythrops Hartlaub, Orn. W.-Afr. 1857, p. 58 : Calabar, W. Africa.

[B. coll.] 1 S. of Rejaf, L.E.

[Chr. coll.] 1 Meridi Jan. B.G.

Cisticola erythrops roseires, subsp. nov. (Pl. X. fig. 6.)

[B. coll.] 3 Roseires Apl. Aug., 1 Disa Apl. Sen.

We have examined the series of *Cisticola erythrops* in the Museum. It is a remarkably distinct form and can hardly be confused with any other. No races appear to have been recognized, and we believe we can distinguish the following :—

C. E. ERYTHROPS (Hartl.).

A richly coloured race (Pl. X. fig. 5) with the back of slaty shade becoming more rufous on the head; below very rufous with the white on the throat and abdomen much reduced; no apparent seasonal change. Wing, ♂ 58–62, average 60 mm.; ♀ 53–57, average 55 mm.

Distribution. West Africa: Cameroon to the Gold Coast, and eastwards to Ruwenzori and to the Lado district.

C. E. ZWAIENSIS, subsp. n.

Resembling *C. e. erythrops*, but rather larger and paler; the underside is very rufescent with only a small trace of white on the throat; a distinct seasonal change: birds dated December and February have a distinctly rufous head and nape; birds dated June have only the forehead rufous, the crown and nape washed with olive. Wing, ♂ 62–65, ♀ 55–57 mm.

Type : a male collected by Sir A. E. Pease at Lake Zwai 5/ii./01. B.M. reg. no. 1902/1/20/106.

Distribution. Southern Abyssinia. There are two other examples in winter plumage from Lake Zwai, collected by Sir A. Pease and Zaphiro ; and three others from Konta and Kullo, also in southern Abyssinia, collected by Zaphiro.

C. E. ROSEIRES, subsp. n.

Resembling *C. e. zwaiensis*, but very much smaller and a good deal paler (Pl. X. fig. 6). This form also has a similar seasonal change. The three April birds have rufous heads and napes, the August bird has only the forehead rufous shading over the crown into the dull brown of the back ; below much paler than the other two forms, almost white. Wing-measurements : ♂ (as sexed) 51 and 53 ; of ♀ (as sexed) 51, 53 mm.

Type : ♂ collected by A. L. Butler at Roseires, 19/iv./11. B.M. reg. no. 1915/12/24/1058.

Distribution. Only known from the four Sennar birds.

C. E. PYRRHOPS.

Melocichla pyrrhops Cabanis, J. f. O. 1875, p. 236 : Tschintschoscho, Gaboon.

Birds from the Gaboon, Nyasaland, and the Zambesi valley have a pronounced olive wash on the back, and appear to be separable. There are four females only in the Museum ; their wings measure 55–58 mm.

Spiloptila clamans.

Maurus clamans Temminck, Pl. Col. livr. 78, 1828, pl. 466. fig. 2 : Nubia.

Spiloptila clamans Butler, Ibis, 1905, p. 332.

[B. coll.] 1 Wadi Ben Naga Apl., 1 Musid Apl. **B.N.** ;
3 Khartoum Feb. Apl. Nov., 2 Omdurman Mch.
Apl. Kh.

[C. & L. coll.] 2 Omdurman Jan. Mch. Kh. ; 4 White Nile lat. 15° N. Jan. **W.N.**

Schœnicola apicalis.

Catrisus apicalis Cabanis, Mus. Hein. i. 1850, p. 43, note: Kaffirland (*i. e.*, Natal).

Schœnicola apicalis (Cab.) ; Reichw. V. A. iii. p. 577.

Heuglin (Orn. N.O.-Afr. i. p. 273) obtained a single example of this Reed-Warbler on the Gazelle river. He states that it differs from the typical South African bird in being smaller and in having the rectrices broader and darker coloured. Should these differences be well founded it may be called *S. apicalis alexinae* Heugl. (J. f. O. 1863, p. 323).

It was also obtained by Emin near Wadelai and at various places in Uganda.

There are no Sudanese examples in the British Museum.

Bradypterus abyssinicus.

Luscinola abyssinica Blundell & Lovat, Bull. B. O. C. x. 1899, p. xix: Chercher, Abyssinia.

Bradypterus abyssinicus Reichw. V. A. iii. p. 578.

[C. & L. coll.] 6 ♂ 3 ♀ Lake No and $9\frac{1}{2}^{\circ}$ N., $30^{\circ} 40'$ E., Feb. 24–Mch. 1, U.N.

These birds are not distinguishable from the example collected by Blundell and Lovat, which, up to now, has remained unique. It is only subspecifically distinct in our opinion from *B. bradypterus* of South Africa, which is larger and somewhat lighter in colour; while there are a few examples of the same group from East Africa which appear to be intermediate.

The soft parts are marked as follows: Iris very dark brown; bill, upper mandible very dark brown, lower pale yellowish white, greyish at tip; feet flesh-colour.

The wings of the males measure 52–54, those of the females 50–52 mm. Two East African males measure 57 mm., and South African birds, sexing doubtful, measure 58–63 mm.

This is an addition to the Sudanese fauna, and does not appear to have been previously recorded from the Nile valley.

Calamocichla ansorgei nilotica.

Calamocichla ansorgei nilotica Neumann, Nov. Zool. xv. 1908, p. 246: Wadelaï.

[B. coll.] ♀ juv. Mongalla Oct. Mon.

[C. & L. coll.] 12 ♂, 10 ♀, 2 ○, 1 ♀ juv., near Lake No Feb. 9–Mch. 1, U.N.

We have followed Neumann in his recent monograph of this group and have retained the name *nilotica*, though the type species *C. a. ansorgei* is from Angola and only known from one example.

The fine series collected by Lynes and Lowe exactly match the specimen collected by Emin at Wadelaï.

The young birds, one from Mongalla and one from Lake No, are ochraceous rather than ashy, especially below.

The colour of the soft parts is as follows: Iris sienna; upper mandible smoky brown, lower yellowish brown; legs sepia, sometimes with a greenish tinge; mouth-lining pale yellow.

Measurements of the wings of five males, 72–78 mm.; of four females, 74–76 mm.

Calamocichla leptorhyncha nuerensis.

Calamocichla leptorhyncha nuerensis Lynes, Bull. B. O. C. xxxiii. 1914, p. 130: Nuer country, Upper White Nile.

[B. coll.] 1 ♀ juv. Shamba Feb. Mon.

[C. & L. coll.] 6 ♂, 2 ♀, 7 ○, 1 ♀ juv., near Lake No Feb.–Mch. 4, U.N.

Capt. Lynes has given an ample description of this interesting form, to which we have nothing to add.

Hippolais pallida pallida.

Hippolais pallida pallida (Hempr. & Ehr.); Hartert, Vög. pal. Faun. p. 574.

Hypolais pallida Butler, Ibis, 1905, p. 334, 1909, pp. 82, 395.

[B. coll.] 1 Talgwareb Apl. 29, R.S.; 1 Kamlin Mch. B.N.; 10 Khartoum Oct. 17, Nov. Feb. Mch. Apl. 21, Kh.; 1 Jebel Ahmed Aga Jan. U.N.

[C. & L. coll.] 1 Kamisa, 1 Singa Dec. Sen.; 1 Melut Jan., 1 nr. Lake No Mch., 1 $9\frac{1}{2}^{\circ}$ N., $30^{\circ} 40'$ E., Feb. W.N.

A common winter bird in north-east Africa, breeding in south-eastern Europe and western Asia.

Hippolais languida.

Hippolais languida (Hempr. & Ehr.); Hartert, Vög. pal. Faun. p. 573.

[B. coll.] 1 ♂ Khartoum, 24 Aug.

This species has been obtained in Eritrea and the Aden Protectorate, also in August, and possibly breeds in north-east Africa as well as in western and central Asia. It does not appear to have been previously recorded from the Sudan.

Sylvia nisoria nisoria.

Sylvia nisoria nisoria (Bechst.); Hartert, Vög. pal. Faun. p. 578; Butler, Ibis, 1909, p. 396.

[B. coll.] 1 Port Sudan Apl. 5, Khor Arbat May 5, R.S.

[C. & L. coll.] 3 Sinkat Mch. R.S.; 2 White Nile lat. 12° N. Mch. W.N.

Scarce on the Nile, but extremely plentiful on spring migration along the Red Sea coast (*A. L. B.*).

Sylvia communis communis.

Sylvia communis communis Latham; Hartert, Vög. pal. Faun. p. 586.

Sylvia cinerea Bechst.; Butler, Ibis, 1909, p. 397.

[B. coll.] 1 Port Sudan, Apl. 30, R.S.; 1 Disa Apl. 15, Sen.

[C. & L. coll.] 1 Sinkat Mch. 24, 1 Erkowit Mch. 31, R.S.; 1 Kamisa Dec. Sen.

These Whitethroats seem to be all referable to the European typical race, though there is no reason why the eastern race *S. c. icterops* should not occur. Most of

the Arabian and Somaliland examples in the British Museum appear to belong to the latter form.

Scarce in winter at Khartoum as compared with the Lesser Whitethroat (*A. L. B.*).

Sylvia simplex.

Sylvia simplex Latham; B. O. U. List Bt. Bds. p. 66.

Sylvia borin borin (Bodd.); Hartert, Vög. pal. Faun. p. 582.

Sylvia hortensis Bechst.; Butler, Ibis, 1905, p. 335, 1908, p. 231, 1909, p. 396.

[B. coll.] 2 Khor Arbat May 4, R.S.: 3 Roseires Sept. 13-15, Sen.; 1 Khartoum Oct. 15.

The Garden-Warbler is common on migration, especially in spring; it winters farther south.

Sylvia rüppelli.

Sylvia rüppelli Temm.; Hartert, Vög. pal. Faun. p. 592; Butler, Ibis, 1905, p. 335.

[B. coll.] 2 Shendi Mch. 2, Ber.; 3 Fatasha, W. of Omdurman, Nov., 1 thirty miles west of Omdurman Jan. Kh.

Three of the birds are sexed females, and are without the characteristic black cap, but show slight traces of black feathers coming in on the crown. They are probably young birds.

Sylvia hortensis hortensis.

Sylvia hortensis hortensis (Gmel.); Hartert, Vög. pal. Faun. p. 580.

Sylvia orphea auct.

[B. coll.] 1 Shendi Mch. 1, Ber.

Sylvia hortensis crassirostris.

Sylvia hortensis crassirostris Cretzschm.; Hartert, Vög. pal. Faun. p. 581.

[B. coll.] 1 Erkowit Apl. 3, 1 Gebeit Mch. 21, R.S.

[C. & L. coll.] 2 Sinkat Mch. 19, R.S.; 3 Kamisa Dec. Sen.

The eastern race of the Orphean Warbler is undoubtedly the prevailing one in the Sudan. As this is the form breeding in south-western Europe and western Asia it is not surprising, but the bird from Shendi has the short bill of the western race and is rather dusky below, and we are inclined to identify it with the western typical form.

Sylvia curruca curruca.

Sylvia curruca curruca (Linn.) ; Hartert, Vög. pal. Faun. p. 588; Butler, Ibis, 1905, p. 336, 1908, p. 231, 1909, p. 397.

[B. coll.] 2 Erkowit Mch., 1 Port Sudan May 2, Khor Arbat May 2, R.S.; 3 Khartoum Feb. Apl., 2 Fatasha Nov. 3, Kh.

[C. & L. coll.] 1 Sinkat Mch. R.S.; 1 Singa Dec., 3 Kamisa Dec. Sen.; 1 Hassania Island Jan. W.N.

Widely distributed in winter. Perhaps the most abundant of the migratory Warblers (*A. L. B.*).

Sylvia nana nana.

Sylvia nana nana (Hempr. & Ehr.) ; Hartert, Vög. pal. Faun. p. 590.

[C. & L. coll.] 2 (♂ ♀) Port Sudan Dec. 5, R.S.

The label gives: "Iris brilliant chrome-yellow, legs bright straw-yellow. Two together in a tiny mimosa bush in the desert."

This little Warbler does not appear to have been previously met with in the Sudan, but it is known to winter in Arabia and on the Somali coast, and it is not surprising to find it near Port Sudan.

Sylvia mystacea.

Sylvia mystacea Ménétr. ; Hartert, Vög. pal. Faun. p. 595.

[C. & L. coll.] 2 Sinkat Mch., 3 Port Sudan Dec. R.S.

Two of the Port Sudan birds have the forehead yellowish, contrasting strongly with the dull brown crown and back; in the third example this colour has almost disappeared and it resembles a bird from Shendi in the Museum identified

by Messrs. N. C. Rothschild and Wollaston as *S. momus*. The crown is rather more ashy than the back, but is not black as in the two examples from Sinkat collected in March. All the others have the characteristic vinous flush on the underside.

Sylvia atricapilla atricapilla.

Sylvia a. atricapilla (Linn.) ; Hartert, Vög. pal. Faun. p. 583 ; Butler, Ibis, 1905, p. 335, 1909, p. 396.

[B. coll.] 1 Khor Arbat May 2, R.S.; 4 Khartoum Oct. Dec.

[C. & L. coll.] 1 Port Sudan Dec., 2 Erkowit Apl. 4, 6, R.S.

Very common on the Red Sea coast during the spring migration, widely distributed in winter from Khartoum to Lado. It is not rare in winter on the scrubby desert west of Omdurman and along the Nile north of Khartoum (*A. L. B.*).

Sylvia melanocephala momus.

Sylvia melanocephala momus (H. & E.) ; Hartert, Vög. pal. Faun. p. 594.

Heuglin (Orn. N.O.-Afr. i. p. 303) states that he met with this bird on migration in the Bayuda desert, Dongola Province. He named it *Sylvia melanocephala minor*, which is identified by Hartert with *S. m. momus*. It was also procured by Messrs. N. C. Rothschild and Wollaston at Shendi (Ibis, 1902, p. 17).

There are no Sudanese examples in the British Museum.

Phylloscopus trochilus eversmanni.

Phylloscopus trochilus eversmanni (Bonap.) ; Hartert, Vög. pal. Faun. p. 509.

Phylloscopus trochilus apud Butler, Ibis, 1908, p. 231.

[B. coll.] 12 Khartoum Mch. Apl. Oct.; 1 Roseires Apl. Sen.

We are inclined to regard all the Willow-Wrens collected by Butler as belonging to the slightly greyer eastern race.

Phylloscopus trochilus trochilus.

Phylloscopus trochilus trochilus (Linn.); Hartert, Vög. pal. Faun. i. p. 507.

[Chr. coll.] 1 Yambio, Meh. B.G.

A single example of the Willow-Wren collected by Dr. Christy in the Bahr el Ghazal appears to belong to the typical western race.

Phylloscopus bonelli orientalis.

Phylloscopus bonelli orientalis (Brehm); Hartert, Vög. pal. Faun. p. 514.

[C. & L. coll.] 5 Sinkat Meh. R.S.; 1 Sennar Jan.;
1 Korti Meh. W.N.; 1 Tonga Feb. U.N.

The Bonelli Warblers collected by Messrs. Chapman and Lynes undoubtedly belong to the eastern race. There appear to be no Sudanese examples in the Museum collections though there are a good number from Egypt. It is not represented in the Butler collection, though he informs us he obtained it at Khartoum.

Phylloscopus collybita abietina.

Phylloscopus collybita abietina (Nilsson); Hartert, Vög. pal. Faun. p. 503.

Phylloscopus rufus apud Butler, Ibis, 1905, p. 335, 1908, p. 231.

[B. coll.] 6 Khartoum Apl. & Nov.; 1 Kawa Nov.
W.N.

[C. & L. coll.] 1 Kamisa Dec. Sen.; 2 White Nile
15° N. lat. Jan., 1 9½° N. lat. Feb.

All these Chiffchaffs appear to belong to the larger and paler Scandinavian race.

Widely distributed in winter (*A. L. B.*).

Apalis rufifrons rufifrons.

Prinia rufifrons Rüppell, N. Wirbelth. 1835, p. 110,
pl. 41: Abyssinian coastlands.

Apalis rufifrons (Rüpp.); Reichw. V. A. iii. p. 600.

[B. coll.] 1 Erkowit Mch., 1 Erba Mch. R.S. ; 2 Fatasha Feb. Kh.

[C. & L. coll.] 1 Port Sudan Dec., 5 Sinkat Mch.,
2 Erkowit Apl. R.S.

There is also an example from Habissa Wells, Kordofan, collected by Capt. Dunn, in the Museum. *A. r. smithi* [*Dryodromas smithi* Sharpe, Bull. B. O. C. iv. 1895, p. 29 : Somaliland], though not recognized by Reichenow, seems to form a distinct subspecies distinguished by its rufous head, while in the present form that colour is confined to the forehead.

Drymocichla incana.

Drymocichla incana Hartlaub, P. Z. S. 1880, p. 626, pl. 60 : Magungo, Albert Nyanza ; Reichw. V. A. iii. p. 613.

[B. coll.] 1 Kajo Kaji, Mch. L.E.

[Chr. coll.] 2 Meridi Jan. Feb. B.G.

Rare ; only met with at one spot at Kajo Kaji (A. L. B.).

Phyllolais pulchella.

Maturus pulchellus Cretzschmar, Atlas, 1826, p. 53, pl. 35 : Kordofan.

Apalis pulchella Reichw. V. A. iii. p. 610.

Phyllolais pulchella Butler, Ibis, 1905, p. 332.

[B. coll.] 3 Roseires July, Aug. Sen. ; 1 Taufikia Mch.,
1 Bahr el Zeraf June, U.N. ; 3 Mongalla, 1 Sheik
Tombé Jan. Mon.

[C. & L. coll.] 6 Kamisa Dec., 1 nr. Senga Dec. Sen. ;
2 Jebel Ahmed Aga Jan., 1 nr. Renk Jan., 1 Tonga
Feb., 2 nr. Lake No Feb. U.N.

Sylvietta brachyura dilutior.

Syviella carnapi dilutior Reichw., *vide infra*.

[B. coll.] 3 Mongalia.

[Chr. coll.] 1 Meridi Feb. B.G.

Sylvietta brachyura nilotica.*Sylvietta brachyura nilotica* Neumann, *vide infra*.*Sylviella brachyura* apud Butler, Ibis, 1905, p. 331, 1908, p. 228, 1909, p. 82.

[B. coll.] 1 Erkowit Meh. R.S.; 1 Doka May, Kas.; 6 Roseires Apl. July, Aug. Sen.; 1 Taufikia Feb. U.N.; 1 Wau Apl., 1 Gamaiza Apl. B.G.

[C. & L. coll.] 2 Sinkat Meh., 1 Erkowit Apl. R.S.; 6 Kamisa Dec. Sen.; 1 Jebel Ahmed Aga Jan., 1 Tonga Meh., 2 nr. Lake No Feb. U.N.

In naming these birds we found it necessary to examine all the species of *Sylvietta* with rufous undersides. We came in the main to the same conclusion as Zedlitz in his valuable paper on the genus, J. f. O. 1916, pp. 93-100, that there are three distinct groups.

The first of these, the "rufescens" group, is of large size, with a large bill, a dark streak through the eye, and a whitish eyebrow. Underside all one colour. Confined to South Africa.

The second group is the "whytii-jacksoni" group, of smaller size, with no dark eye-streak, and the eyebrow and cheeks strongly rufous. Underside all one colour, sometimes slightly paler in the centre of the abdomen. East and Central Africa.

The third group is the "brachyura" group, of size similar to the last, and in some cases very close to it, but always with a dark or grey eye-streak, and with a noticeable white patch in the centre of the belly; in some cases on the throat as well. N.W., Central, W., and N.E. Africa.

I. "Rufescens" group.

1. SYLVIETTA RUFESCENS RUFESCENS.

Dicaeum rufescens Vieill. Nouv. Dict. ix. 1817, p. 407: Olipbant river, Cape Colony (ex Levaillant).

Vieillot founded his *Dicaeum rufescens* on Levaillant's plate (Ois. d'Afr. iii. pl. 135).

Levaillant figured this bird from specimens obtained at

the "Elephant's River," *i. e.*, Oliphant River, western Cape Colony, and therefore this name must refer to the western and paler race. *Sylviella flecki* Reichw. O. M. 1900, p. 22, from south of Lake Ngami, is therefore a synonym. This race is characterized by its strong beak, plainly marked dark streak through the eye, and whitish superciliary stripe; the underside is pale rufous. Wing 58-62 mm. It extends from western Cape Colony through S.W. Africa, Namaqualand and Bechuanaland, probably to the western Transvaal.

For the other and richer coloured race we propose the name—

2. *SYLVIETTA RUFESCENS TRANSVAALENSIS*, subsp. nov.

A race very similar to *S. r. rufescens* but more richly coloured, with a more rufous underside. Slightly larger, wing 60-65 mm. Type, a specimen collected at Rustenberg, 6 June 1878, by W. Lucas; no sex given. B.M. reg. no. 95/5/1/1053.

Range. Transvaal, except the western portion, and South Rhodesia. There are also in the Museum collections four specimens from N. Rhodesia and Nyasaland which appear to be indistinguishable in size and coloration from this race. Further material, however, may prove this to be distinct. It apparently occurs side by side with *S. whytii jacksoni*.

3. *SYLVIETTA RUFESCENS PALLIDA*.

Sylviella pallida Alexander, Bull. B. O. C. viii. 1898, p. 48: Zambesi River, 30 miles above Tete.

A much paler race, apparently confined to the Zambesi valley. Similar to *S. r. rufescens* but paler, especially on the throat, and with a smaller bill. Smaller; wing 55-58 mm.

Range. Confined to the Zambesi valley in the neighbourhood of Tete.

It is curious to find a pale race in a locality like this, especially as a darker race is found to north and south of it.

SYLVIETTA ISABELLINA.

Sylviella isabellina Elliot, Field Columb. Mus. Publ., Orn. Ser. vol. i. 1897, p. 44 : Le Gud, Somaliland.

Sylviella gaikwari Sharpe, Bull. B. O. C. xi. 1901, p. 47 : Ania, Somaliland.

Sylvietta erlangeri Reichw. O. M. 1905, p. 25 : Ennia Galla, Somaliland.

This species, of which *S. gaikwari* and *S. erlangeri* Reichw. appear to be synonyms, is nearly allied to the "rufescens" group. As, however, there would be a very great and unusual gap in the distribution if it were placed in that group, we prefer to regard it as a separate species.

II. "Whytii-jacksoni" group.

1. SYLVIETTA WHYTII WHYTII.

Sylviella whytii Shelley, Ibis, 1894, p. 13 : Zomba, Nyasaland.

Sylviella fischeri Reichw. Orn. Monatsb. 1900, p. 22 : Malindi, British E. Africa.

Distinguished from the "rufescens" group by the lack of a dark stripe through the eye and the more rufous cheeks. The bill also is smaller. Underside pale rufous. Wing 52-57 mm.

According to Zedlitz (J. f. O. 1916, p. 25) *S. fischeri* is a synonym.

Range. Nyasaland, S. Rhodesia, and Portuguese E. Africa, north along the coast to Mombasa and the Teita country.

2. SYLVIETTA WHYTII MINIMA Grant, Ibis, 1900, p. 156 : Manda Island, British E. Africa.

Very similar to *S. w. whytii*, but with the upperside a considerably paler grey. Wing 51-55 mm.

Range. Manda Island, British E. Africa.

3. SYLVIETTA WHYTII JACKSONI.

Sylviella jacksoni Sharpe, Bull. B. O. C. vii. 1897, p. 7 : Kamassia, British E. Africa.

Considerably richer in colour than either of the last two

rates, the underside being a very warm rufous. Wing 58-63 mm.

Range. Western British East Africa, north to Lake Zwai in south Abyssinia, south to the Usangu district of German East Africa.

In the Smithsonian Miscellaneous Collections, lvi. 1911, No. 20, p. 11, Mearns describes a race from Fort Hall as *S. w. loringi*. We have no specimens from Fort Hall itself, but two specimens from the Athi river in the close vicinity are indeed somewhat paler than typical specimens of *S. w. jacksoni*. This is only to be expected as Fort Hall is a place where the desert fauna would naturally meet with the highland fauna and an intermediate form be thus produced.

Another race, *S. w. abayensis*, was also described by Mearns (Smithson. Misc. Coll. lxi. 1913, No. 20, p. 4) from Lake Abaya. We have a series collected by Zaphiro from near that locality and can in no way distinguish them from typical *S. w. jacksoni*.

III. "Brachyura" group.

1. SYLVIETTA BRACHYURA BRACHYURA.

Sylvietta brachyura Lafres. Rev. Zool. 1839, p. 258: Senegambia.

A very good description of this bird is given by Lafresnaye. A grey stripe through the eye, eyebrow and chin pale rufous, in some cases almost white; underside rufous with, as a rule, a well-marked white patch in the middle of the abdomen. Size small; wing 52-56 mm.

Range. Senegambia to N. Nigeria (Lake Chad).

2. SYLVIETTA BRACHYURA CARNAPI.

Sylviella carnapi Reichw. O. M. 1900, p. 22: Eastern Cameroon.

? *Sylviella olivæ* Alex. Bull. B. O. C. xxiii. 1909, p. 16: Bamingui river.

Very similar to *S. b. brachyura*, but richer in colour underneath and with a richer rufous eyebrow and chin. We have no specimens of this race, but one bird from the river Bamingui, the type of *S. olivæ*, Alexander, may possibly belong to it.

Range. Eastern Cameroon, possibly to Bamingui river.

3. SYLVIAETTA BRACHYURA DILUTOR.

Sylviella carnapi dilutor Reichw. O. M. 1916, p. 154: Ruwenzori.

Like *S. b. carnapi*, but the underside a slightly paler rufous. In some examples there is a considerable amount of white on the belly. Wing 53–60 mm.

Range. Uganda, the upper White Nile, and the Bahr el Ghazal.

4. SYLVIAETTA BRACHYURA MICRURA.

Troglodytes micrurus Rüppell, Neue Wirbelth. 1835, p. 109: Kordofan.

We have no specimens from Kordofan, but Neumann (J. f. O. 1906, p. 279), who has examined Rüppell's types, states that they belong to a desert form and are distinct from birds of the Nile valley. This appears to conclusively fix the name *micrura* for this form, although Rüppell's figure is more like the Abyssinian race.

5. SYLVIAETTA BRACHYURA NILOTICA.

Sylvietta brachyura nilotica Neum. J. f. O. 1906, p. 279: Shabeisha, White Nile Province.

This race is distinguished by Neumann from *S. b. micrura* on account of its richer coloration and shorter bill. It is distinguishable from *S. b. carnapi*, to which it is very closely allied, by the slightly paler rufous of the breast. It is in fact intermediate between *S. b. carnapi* and *S. b. micrura*. Chin slightly paler but not white, eyebrow rufous. Wing 52–58 mm.

Range. White Nile valley, east to Eritrea, and the western half of Abyssinia.

6. SYLVIETTA BRACHYURA LEUCOPSIS.

Sylviella leucopsis Reichw. Orn. Centralb. 1879, p. 114 : Tana river, B.E.A.

Sylvietta brachyura tavetensis Mearns, Smithson. Misc. Coll. lxi. 1913, No. 20, p. 5 : Taveta.

Sylvietta brachyura hilgerti Zedlitz, J. f. O. 1916, p. 99 : Dire Dawa.

This race is at once distinguishable from all others by its white eyebrow and white chin. Zedlitz distinguishes the Abyssinian and northern Somali birds by their larger size (J. f. O. 1916, p. 99). We find, however, there is such great variation in this respect that we prefer to keep them all together.

Range. From eastern Eritrea through Somaliland and eastern Abyssinia to Baringo and Kilimanjaro.

Mearns (Smithson. Misc. Coll. lxi. 1913, No. 20, p. 5) describes a race from Taveta as *S. b. tavetensis*. We have specimens from this locality, and cannot distinguish them from *S. Somaliland* examples.

As the type-locality of *S. b. leucopsis* is the Tana river, it would certainly be unlikely to find a different race of a desert species there, with only the Taru desert in between.

Sylvietta ansorgei Hartert, Bull. B. O. C. xix. 1907, p. 97 : Huxé, Benguella, of which *S. lowei* (O.-Grant, Bull. B. O. C. xxvii. 1911, p. 105 : S. Paul de Loanda) is undoubtedly a synonym, is a very distinct form with an almost entirely white underside, and may well remain as a distinct species.

Other described species or subspecies, the types of which we have not seen, are :—

Sylviella distinguenda Madarász, Arch. Zool. i. 1910, p. 177 : Ngare-Dowash, west of Victoria Nyanza, probably = *S. w. jacksoni*.

Sylvietta epipolia Reichw. O. M. 1910, p. 7 : N. Adamaua, is near *S. carnapi* but smaller,

*Sylvietta rufescens ochrocar*a Oberholser, Smiths. Misc. Coll. xlvii. 1905, p. 373 : Damaraland, is probably identical with *S. r. rufescens*.

Sylvietta whytei pallidior Grote, O. M. 1911, p. 13 : Mikandini, Germ. E. Afr., is, according to Zedlitz, an abnormally coloured *S. whytii*.

Sylviella chubbi O.-Grant, *S. batesi* Sharpe, *S. denti* O.-Grant, *S. hardyi* Bannerman, *S. neumanni* Roths., all belong to an entirely different section of the genus.

Eremomela elegans elegans.

Ficedula elegans Heuglin, S.B. Akad. Wien, xix. 1856, p. 275 : "Kollaland," i.e. Sennar on the Abyssinian border [nom. nud.].

Eremomela elegans Heuglin, J. f. O. 1864, p. 259 ; Reichw. V. A. iii. p. 638.

[B. coll.] 3 Roseires July Sept. Sen.

Eremomela elegans canescens.

Eremomela canescens Antinori, Cat. Coll. Ucc. 1864, p. 38 : Djur river, B.G.

Eremomela elegans apud Butler, Ibis, 1908, p. 228, 1909, p. 81.

[B. coll.] 1 Dug Dug Jan., 1 Chak Chak Feb., 1 Wau Meh. B.G. ; 2 Mongalla ; 2 Kajo Kaji Meh. L E.

[Chr. coll.] 3 Meridi Jan., 2 Mt. Baginzi Meh., 1 Tembura Apl. B.G. ; 3 Yei Nov. Dec. L.E.

The birds from Sennar are much paler than those from the south both as regards the yellow of the back and underparts and the grey of the head, and as they are practically topotypes of Heuglin's species, we identify them with the typical race.

The birds from Mongalla and the Bahr el Ghazal are very close to the southern Abyssinian bird named *E. e. abyssinica* by Bannerman, though in the original description a comparison was made with birds from the upper Nile as there were no examples of the typical race in the Museum at the time. The three forms are therefore :—

E. e. elegans (Heugl.), with pale grey head and a paler back and underside. Sennar.

E. e. abyssinica Bannerman, with the head more dusky and the back darker washed with greenish; underparts as in *E. e. elegans*. S. Abyssinia.

E. e. canescens Ant.; head of a grey intermediate between that of the other two, a bright yellow back without greenish, and a very bright yellow underside. Upper White Nile westwards to Shari river.

Eremomela caniceps.

Eremomela caniceps Cassin, Proc. Philad. Acad. 1859, p. 38: Camma river, Gaboon; Reichw. V. A. iii. p. 638.

[Chr. coll.] 1 Tembura Apl. B.G.

This bird is new to the Sudan and the Bahr el Ghazal, but it was obtained at Magungo on Lake Albert by Emin, and by Alexander on the Bamingui river, a tributary of the Shari, in French Congo.

Eremomela flaviventris griseoflava.

Eremomela griseoflava Heuglin, J. f. O. 1862, p. 40: Bogosland.

[C. & L. coll.] 3 Sinkat Mch. R.S.; 2 Kamisa Dec., 2 Singa Dec., 1 Sennar Jan. Sen.

Eremomela flaviventris alexanderi, subsp. n.

[B. coll.] 2 Bara Apl., 1 Um Bosha May, Kor.

[C. & L. coll.] 1 Hassania Island Jan., 1 Jebelein Jan.

U.N.

These birds, together with some others collected by Boyd Alexander near Lake Chad, are much paler than the birds from Sennar, Bogosland, and Abyssinia, and must be considered a distinct race. The back is a much paler shade of brown, and the lower part of the back faintly but distinctly washed with yellowish, which becomes in some cases quite a marked feature on the rump itself; this

is not due to the make up of the skins and the appearance of the yellow from below. There seems to be no difference in dimensions : the wings measure 50–55 mm.

Type, a ♀ from Bara, Kordofan, 27/iv./04. A. L. Butler coll., B.M. reg. no. 1916/9/20/985.

Other examples in the British Museum are :—4 near Lake Chad (*Alexander*), 1 Bara, Kordofan (*Capt. W. H. Dunn*), 1 Jebel Auli, White Nile (*Hawker*).

We recognize, following Ogilvie-Grant (Bull. B. O. C. xxv. 1910, p. 120), the following forms of *E. flaviventris* :—

E. f. flaviventris (Burchell) : Asbestos Mts., Griqualand West. *Distr.* Damaraland and Angola eastward to Lake Ngami, Bechuanaland, and the Western Transvaal.

E. f. saturator O.-Grant : Deelfontein. *Distr.* Central Cape Colony, Deelfontein, and Kingwilliamstown.

E. f. polioxantha Sharpe : Swaziland. *Distr.* Swaziland, eastern Transvaal, Rhodesia, and Nyasaland.

E. f. abdominalis Reichw. : Tanganyika to Kikuyu. We have seen no examples of this form.

E. f. crawfurdi Stephenson-Clarke, Bull. B. O. C. xxix. 1911, p. 43 : Sotik, Br. E. Africa ; only known from the type.

E. f. flavicrissalis Sharpe : Webbe Shebeli, S. Somali. *Distr.* S. Somali and Jubaland, B. E. Afr. ; with this we unite *E. erlangeri* Reichw. It is easily distinguished by its small size ; wing under 50 mm.

E. f. griseoflava Heuglin : Bogosland. *Distr.* Sennar and Red Sea Province of the Sudan south to Shoa and northern Somaliland.

E. f. alexanderi, vide supra. Upper White Nile to Kordofan and L. Chad.

Camaroptera griseoviridis griseoviridis.

Orthotomus griseoviridis v. Müller, Naumannia, i. pt. 4, 1851, p. 27 : Kordofan.

Camaroptera g. griseoviridis Zedlitz, J. f. O. lix. 1911, p. 334.

Camaroptera brevicaudata (nec Cretzsch.); Butler, Ibis, 1905, p. 331.

[B. coll.] 3 Roseires Apl. July, 1 Fazogli May, Sen. ;
1 Jebel Melbis Apl. Kor. ; 1 Renk Mch., 1 Taufikia
Apl. U.N.

[C. & L. coll.] 5 Erkowit Apl. R.S. ; 4 Kamisa Dec.,
1 Singa Dec. Sen. ; White Nile lat. 13° N. Jan.
• W.N. : Tonga Feb. U.N.

Camaroptera griseoviridis abessinica.

Camaroptera griseoviridis abessinica Zedlitz, J. f. O. lix. 1911, p. 338 : Harrar.

Camaroptera brevicaudata (nec Cretzsch.) Butler, Ibis, 1908, p. 228, 1909, p. 82.

[B. coll.] 2 Wau Apl. B.G. ; 3 Mongalla "summer,"
2 Sheikh Tombé "summer," 2 Kenisa Jan. Mon.

[C. & L. coll.] 3 nr. Lake No Feb Mch. W.N.

[Chr. coll.] 1 Yambio Mch., 1 Tembura Apl. B.G.

Count Zedlitz has monographed this very difficult group, and we are content to follow his conclusions. We find the birds from the Mongalla Province and Bahr el Ghazal are distinctly darker and more richly coloured, and agree best with *C. g. abessinica*, of which the Museum contains a good series ; while those from lower White Nile from Taufikia downwards agree with the paler Kordofan form. The examples from Erkowit and Roseires are intermediate, being darker than the others and approaching the Abyssinian form.

Camaroptera brevicaudata Cretzsch. from Kordofan is believed by Zedlitz to be the young bird of a form of the group *C. superciliaris* of West Africa, distinguished by its yellow eye-stripe and green back. If this is so, there is nothing at all like it in the Museum collection or among the Butler birds. Our opinion is that Cretzschmar's description and figure is founded on a young bird of what we here call *C. griseoviridis*. We have in the series before us two

skins from Mongalla which we believe to be nothing but young birds. These are distinctly greenish, changing to brown on the head, and appear to us to accord very well with Cretzschmar's description and figure. If our conclusion is correct, the name of this bird will of course have to be changed back to *C. brevicaudata* Cretzsch.

Prinia gracilis gracilis.

Sylvia gracilis Lichtenstein, Verz. Doubl. 1823, p. 34 : Nubia.

Burnesia gracilis Butler, Ibis, 1905, p. 332.

Prinia gracilis Butler, Ibis, 1909, p. 395.

[B. coll.] 2 Khor Arbat May, R.S. ; 2 Khartoum Apl. July.

[C. & L. coll.] 4 Port Sudan Dec. Apl. R.S.

There is some doubt as to the distribution of the races of this bird. The Red Sea Province birds seem slightly darker, but a considerably larger series would be necessary before we could offer any opinion.

Prinia mistacea mistacea.

Prinia mistacea Rüpp. Neue Wirbelth. 1835, p. 110 : Gondar, N. of L. Tsana, Abyssinia.

Prinia mystacea and *murina* Butler, Ibis, 1905, p. 332, 1909, p. 82.

[B. coll.] 1 Disa Apl., 2 Roseires Aug. Sen. ; 1 nr. Renk Dec., 1 Taufikia Apl. U.N. ; 1 Bahr el Jebel May, 2 Bahr el Zeraf June, 4 Kenisa summer, Mon. ; 1 Wau Apl. B.G.

[C. & L. coll.] 1 Singa, 1 Eneikliba, 10 Kamisa Dec. Sen. ; 13 White Nile between Jebelein and Lake No Jan. Feb.

[Chr. coll.] 1 Tembura Apl., 2 Meridi Jan. Feb. B.G.

The races of *Prinia mistacea* do not appear to have been hitherto worked out. The following is the result of an examination of the long series in the British Museum :—

1. PRINIA MISTACEA MISTACEA (see above).

With a very pronounced seasonal plumage change, the winter (October to March) birds being very bright rufous and the summer (April to September) pale grey. Wing 46-52; tail in summer averages 50, in winter 60-62 mm.

Distr. Abyssinia westwards through the Sudan to Northern Nigeria and Gold Coast hinterland; probably to Senegal, and in that case *Drymoica superciliosa* of Swainson will be a synonym.

D. murina Heuglin, Ibis, 1869, p. 90: N. Abyssinia, was founded on a bird in summer plumage and is undoubtedly a synonym.

2. PRINIA MISTACEA MELANORHYNCHA (*D. melanorhynchus* Jard. & Fraser, Contr. Orn. 1852, p. 60: Abomey).

Birds from west African coastlands from Portuguese Guinea to Southern Nigeria have, so far as we can see, no plumage change. They resemble the summer birds of *P. m. mistacea*, but are considerably darker and more richly coloured. Wing 45-51 mm.

Cameroon birds are intermediate between this form and the next.

3. PRINIA MISTACEA TENELLA (*Drymæca tenella* Cabanis in Von der Decken's Reisen, iii. 1869, p. 23: Mombasa).

This form has no plumage change and closely resembles the last-named, but is rather larger: wing 48-55 mm.

Distr. East Africa and Uganda to the Belgian Congo.

4. PRINIA MISTACEA AFFINIS (*Drymoica affinis* Smith, Illustr. Zool. S. Afr., Aves, 1843, pl. 77: interior of S. Afr.).

With a pronounced seasonal plumage change corresponding to that of *P. m. mistacea* but reversed, the summer being October to March and the winter March to October. Flanks very tawny in winter plumage. Larger: wing 48-55 mm.

Distr. South Africa from N. Rhodesia and northern Angola southwards.

Family TURDIDÆ.

*Turdus philomelos philomelos.**Turdus philomelos philomelos* Brehm ; Hartert, Vög. pal. Faun. p. 650.*Turdus musicus* auct. ; Butler, Ibis, 1908, p. 233.

[B. coll.] 1 Erkowit Mch. R.S. ; 2 Khartoum Nov. Feb.

A rare winter bird so far south. It is not given in Reichenow as an African bird, but Hartert states it was taken by Beccari in Eritrea in Dec. 1905.

Abundant on migration at Erkowit (A. L. B.).

*Turdus torquatus alpestris.**Turdus torquatus alpestris* (Brehm) ; Hartert, Vög. pal. Faun. p. 665.*Turdus torquatus* apud Butler, Ibis, 1905, p. 337.

[B. coll.] 1 Khartoum Dec.

This is not only the sole record of the occurrence of the Ring Ouzel in the Sudan, but is also apparently the first time that the southern European race has been met with anywhere in Africa. *T. t. alpestris* is distinguishable at a glance from *T. t. torquatus* by the much broader white edges to the feathers of the underside.

Capt. S. Flower also obtained a Ring Ouzel at Dongola (A. L. B.).

*Turdus libonyanus pelios.**Turdus pelios* Bp. Consp. i. 1850, p. 273 : Central Asia ! N.E. Africa apud Seebohm, Cat. B. M. v. p. 230 ; Reichw. V. A. iii. p. 690 ; Butler, Ibis, 1905, p. 337, 1908, p. 233, 1909, p. 82.

[B. coll.] 2 Gallabat Mch. Apl. Kas. ; 4 Roseires July Aug., 1 Gerif Apl. Sen. ; 1 Meshra Zeraf May, U N. ; 3 Wau Jan. Apl., 1 Chak Chak Feb. B.G.

[C. & L. coll.] 3 Kamisa Dec. Sen.

[Chr. coll.] 3 Meridi Jan. Feb., 3 Yambio Mch., 1 Wau, B.G. ; 4 Yei Nov. Dec. L.E.

The birds from the Bahr el Ghazal are rather more richly

coloured and have more orange on the flanks; they are intermediate between this form and *T. l. centralis* Reichw. from Uganda and the Lake districts.

***Turdus merula*, subsp. ?**

Mr. Butler informs us that a Blackbird frequented a garden at Port Sudan in 1912, but it does not appear to have been taken, and cannot be satisfactorily identified.

***Monticola solitarius solitarius*.**

Monticola solitarius solitarius (Linn.); Hartert, Vög. pal. Faun. p. 674.

Monticola cyanus auct.; Butler, Ibis, 1905, p. 338.

[B. coll.] 2 Khartoum Oct. Feb.

[C. & L. coll.] 1 Sinkat Mch. R.S.; 3 Jebelein Jan.

W.N.

A common winter visitor.

***Monticola saxatilis*.**

Monticola saxatilis (Linn.); Hartert, Vög. pal. Faun. p. 671; Butler, Ibis, 1905, p. 338, 1908, p. 234, 1909, p. 83.

[B. coll.] 1 Gerif Apl. Sen.; 2 Khartoum Oct.; 2 Chak Chak Feb. Mch., 1 nr. Kojali Feb., 1 Tembura Mch. B.G.; 1 Mongalla Feb.; 1 Lado Feb., 1 Rejaf Feb. L.E.

[C. & L. coll.] 1 Erkowit Apl. R.S.

[Chr. coll.] 1 Meridi Feb. B.G.

A common winter visitor.

***Phœnicurus phœnicurus phœnicurus*.**

Phœnicurus phœnicurus phœnicurus (Linn.); Hartert, Vög. pal. Faun. p. 718.

Ruticilla phœnicurus (Linn.); Butler, Ibis, 1905, p. 336, 1908, p. 232, 1909, pp. 82, 397.

[B. coll.] 4 north Berber Prov. Nov.; 1 Port Sudan Nov. R.S.; 1 Roseires Apl., 1 Jebel Maba Apl. Sen.; 5 Khartoum Oct. Nov. Feb.; 1 Chak Chak Mch., 1 Tonj Jan., 1 Raffali Feb., 1 Tembura Mch. B.G.

[C. & L. coll.] 1 Singa Dec. Sen.; 3 nr. Lake No Feb. U.N.

[Chr. coll.] 1 Meridi Jan. B.G.; 4 Yei Nov. Dec. L.E.

One of Yei birds has light edges to the secondaries and might perhaps be a *P. p. mesoleucus*, but it is impossible to distinguish them when out of plumage.

A common winter visitor to the Sudan.

***Phœnicurus ochruros*.**

Phœnicurus ochruros ochruros (G. S. Gmel.); Hartert, Vög. pal. Faun. p. 722.

[C. & L. coll.] 2 Kamisa Dec. Sen.; 1 White Nile lat. 14° Jan. W.N.

These are all females, and it is impossible to determine to which race of the Black Redstart they should be assigned. There are several other examples in the British Museum also indeterminable. In Abyssinia and Somaliland the prevailing form would appear to be *P. o. phœnicuroides*, if this is really separable from *P. o. ochruros*.

Heuglin states that the Black Redstart comes to southern Nubia only in the winter.

***Cyanosylvia suecica suecica*.**

Luscinia suecica suecica (Linn.); Hartert, Vög. pal. Faun. p. 745.

Cyanecula suecica Butler, Ibis, 1905, p. 337, 1908, p. 233.

[B. coll.] 1 Khartoum Apl.; 1 Kaka Feb. U.N.

[C. & L. coll.] 1 Jebel Ahmed Aga Jan., 1 nr. Tonga Feb. U.N.

Only one of these birds is in full plumage; it appears to belong to the typical race which breeds in north-east Europe and western Siberia.

Scarce as compared to its abundance in Egypt (*A. L. B.*).

***Cyanosylvia suecica magna*.**

Luscinia suecica magna (Sarudny & Loudon); Hartert, Vög. pal. Faun. p. 750.

[B. coll.] 1 Port Sudan Apl. R.S.

This bird, with an almost unspotted pale blue throat and

a wing of 81 mm., appears to be referable to this form. It is known from Arabistan, south-western Persia, and probably breeds in the highlands of Armenia.

Cyanosylvia suecica cyanecula.

Luscinia suecica cyanecula (Wolf); Hartert, Vög. pal. Faun. p. 748.

Mr. Butler informs us that a good many White-spotted Bluethroats are to be found about Port Sudan on the spring migration in April, and that Mr. Nicoll identified two adult males with this form.

Luscinia megarhynchos megarhynchos.

Luscinia megarhynchos megarhynchos Brehm; Hartert, Vög. pal. Faun. p. 733.

Luscinia luscinia apud Butler, Ibis, 1908, p. 233.

[B. coll.] 1 Bahr el Ghazal river, Jan.

[C. & L. coll.] 1 Port Sudan Apl. R.S. (Wings only kept, but probably belonging to this race.)

[Chr. coll.] 1 Yei Nov. L.E.

Luscinia luscinia.

Luscinia luscinia (Linn.); Hartert, Vög. pal. Faun. p. 736.

Lusciola golzi apud Butler, Ibis, 1905, p. 337.

[B. coll.] 4 Khartoum Sept. & Oct.

Large numbers of the Sprosser pass through Khartoum on the autumn migration (*A. L. B.*).

Cercotrichas podobe.

Turdus podobe St. Müll., Linn. Nat. Syst. Supp. 1776, p. 145: Senegal.

Cercotrichas podobe (Müll.); Reichw. V. A. iii. p. 763; Butler, Ibis, 1908, p. 230, 1909, p. 395.

[B. coll.] 2 Gebeit Mch., 2 Khor Arbat May, R.S.; 1 Khartoum July; 1 Jebelein Nov. W.N.

[C. & L. coll.] 1 Port Sudan Dec., 2 Sinkat Mch. R.S.; 3 Kamisa Dec. Sen.; 3 White Nile lat. 13° & 14° N. Jan. W.N.

Cossypha heuglini heuglini.

Cossypha heuglini Hartlaub, J. f. O. 1866, p. 36: Wau (not Keren as stated by Hartlaub, *vide* Heuglin, Orn. N.O.-Afr. i. p. 375); Reichw. V. A. iii. p. 758; Butler, Ibis, 1908, p. 232, 1909, p. 82.

[B. coll.] 1 nr. Rumbek Jan., 1 Katta Jan. B.G.;
1 Mongalla Jan., 1 Shambé Jan. Mon.

[Chr. coll.] 1 Wau July-Aug. B.G.

This is a widespread species, ranging with but slight variation from the Upper Nile to the Transvaal. Birds from southern Angola and Nyasaland and south of the Zambesi are more olivaceous on the back and more richly rufous below, and may be distinguished as *C. h. subrufescens* Bocage (P. Z. S. 1869, p. 553: Caconda, Angola). The coast-bird of East Africa is also possibly distinguishable by its richer rufous underparts, but hardly deserves separation.

Cossypha verticalis verticalis.

Cossypha verticalis Hartlaub, Abh. Geb. Nat. Hamb. 1852, p. 23: Elmina [nom. nud.]; id. Syst. Orn. Westafr. 1857, p. 77; Reichenow, V. A. iii. p. 761; Butler, Ibis, 1908, p. 232.

[B. coll.] 5 Roseires Apl. Sept. Sen

[C. & L. coll.] 5 Kamisa Dec. Sen.

[Chr. coll.] 1 Yambio Mch., 1 Tembura Apl. B.G.;
3 Yei Nov. L.E.

The Christy birds from Lado and the Bahr el Ghazal are slightly larger and darker coloured; they also have a wider band of white on the crown. In these respects they approach *C. v. melanonota* (Cabanis, J. f. O. 1875, p. 235: Tschintschoscho, Loango) which ranges north to Uganda. The Roseires birds, on the other hand, appear to be indistinguishable from the Gold Coast birds which range eastwards along the Welle river, where Alexander procured a good series.

Cichladusa guttata guttata.

Crateropus guttatus Heugl. J. f. O. 1862, p. 300: Bahr el Abiad.

Cichladusa guttata (Heugl.); Reichw. V. A. iii. p. 766 ; Butler, Ibis, 1908, p. 232.

[B. coll.] 1 Gadein Jan. B.G.; 5 Mongalla, 3 Bor summer, Mon.

Erythropygia leucoptera ruficauda.

Erythropygia ruficauda Sharpe, P. Z. S. 1882, p. 589, pl. 45: Malimbe, Congo; Reichenow, V. A. iii. p. 773.

[B. coll.] 1 nr. Chak Chak Mch. B.G.; 1 Rejaf Feb. L.E.

[Chr. coll.] 2 Yei Nov. L.E.

These birds match very well a small series collected on Ruwenzori, but they differ from the typical Congo form in having less black on the outer tail-feathers, and are in this respect intermediate between *E. l. ruficauda* and *E. l. leucoptera* of N.E. Africa. It seems to be a rare bird in the Sudan, not having been previously recorded, and only found in the Lado Enclave.

Mr. Butler mentions that one day near Port Sudan an undoubted *Erythropygia* entered his tent, but escaped before he could secure it. We know of no species yet recorded from that locality.

Tham nolæa albiscapulata albiscapulata.

Saxicola albiscapulata Rüppell, N. Wirbelth. 1836, p. 74, pl. 26: Abyssinia.

Tham nolæa albiscapulata (Rüpp.); Reichenow, V. A. iii. p. 703.

[B. coll.] Jebel Fazogli May, Sen.

This bird was also recorded by Heuglin from east Sennar, but does not appear to extend much farther west than the Abyssinian border.

Tham nolæa albiscapulata subrufipennis.

Tham nolæa subrufipennis Reichenow, J. f. O. 1887, p. 78: Ussure, German East Africa; id. V. A. iii. p. 702.

[B. coll.] 1 Lado Mch. L.E.

This bird does not seem to have previously been recorded

from the Sudan; it is known from various localities in Uganda, and was also obtained by Boyd Alexander at several places between Bauchi in Northern Nigeria and the headwaters of the Welle river. It is distinguished from *T. a. albiscapulata* by the red, instead of black, bases to the tail-feathers.

Thamnolæa nigra.

Ænanthe nigra Vieillot, N. Dict. xxi. 1818, p. 431: Malimbe (*vide* Finsch, Notes Leyden Mus. xxii. 1900, p. 158).

Myrmecocichla nigra (Vieill.) ; Grant, Ibis, 1908, p. 299.

[B. coll.] 2 Lado Apl., 2 Kajo Kaji Mch. Apl. L.E.

[Chr. coll.] 1 Yei Dec. L.E.

This bird is abundant in Uganda, but has not been recorded previously so far north as Lado. Alexander obtained it on the Welle river.

Thamnolæa coronata kordofanensis.

Thamnolæa coronata kordofanensis Wettstein, Anz. Akad. Wien, liii. 1916, p. 131: S. Kordofan.

There are no examples referable to this form in the Museum or in the Butler collection, nor are there any examples of the typical *T. c. coronata* from Togoland (Reichenow, O. M. 1902, p. 157). We have been unable to find the type of *T. claudi* Alexander (Bull. B. O. C. xvi. 1906, p. 124) from Lake Chad, which was afterwards stated by the describer (Bull. B. O. C. xxiii. 1908, p. 16) to be the female of *T. coronata*.

Pentholæa clericalis.

Pentholæa clericalis Hartlaub, Orn. Centralb. 1882, p. 91: nr. Lado.

[Chr. coll.] 11 Yei Nov. Dec. L.E.

This is a bird of restricted distribution confined to the Lado Enclave, where it was discovered by Emin, and to the upper valley of the Welle, whence Alexander obtained an example.

A pair shot by me at Kajo Kaji are now in the Gordon College Museum (A. L. B.).

Saxicola torquata maura.

Pratincola torquata maura (Pall.); Hartert, Vög. pal. Faun. p. 707.

Pratincola rubicola (Linn.); Butler, Ibis, 1905, p. 336.

[B. coll.] 1 Shendi Jan. Ber.; 1 Port Sudan Apl. R.S.;
4 Khartoum Nov. Jan. Feb.; 1 Renk Feb. U.N.

[C. & L. coll.] 3 nr. Renk Jan. Mch., 1 Tonga Feb.,
1 between Sobat and Zeraf rivers Feb. U.N.

The Stonechat of the Sudan obviously belongs to the race breeding in the Caucasus and Persia. On the other hand, most of the Egyptian birds belong to the European *S. t. rubicola*.

Saxicola rubetra rubetra.

Pratincola rubetra rubetra (Linn.); Hartert, Vög. pal. Faun. p. 702; Butler, Ibis, 1905, p. 336, 1908, p. 232.

[B. coll.] 3 Kenisa Oct. Mon.

[Chr. coll.] 1 Meridi Feb. B.G.; 6 Yei Nov. Dec. L.E.

The Whinchat is a common migrant in the Sudan, but the majority pass on to the southern districts of Mongalla and the Bahr el Ghazal to winter (*A. L. B.*).

Cercomela melanura lypura.

Sylvia lypura Hempr. & Ehr. Symb. Phys. 1828, fol. ee : Abyssinia (eastern Eritrea apud Neumann & Zedlitz).

Cercomela melanura lypura (H. & E.); Neumann & Zedlitz, J. f. O. 1913, p. 365.

Myrmecocichla leipura (H. & E.); Butler, Ibis, 1908, p. 235, 1909, p. 399.

[B. coll.] 1 Erkowit Mch., 2 Khor Arbat May, 2 Jebel Bawati May, R.S.

[C. & L. coll.] 3 Sinkat Mch., 1 Kamobsana Dec. R.S.

Found breeding by Butler in the Khor Arbat hills. Neither this nor the brown-tailed *C. s. scotocerca* had been previously found farther north than Eritrea; they both appear to occur together in the same localities, and we think it is possible they are two forms of the same species.

Mr. Butler is also of this opinion. A quite young bird has a black tail like the adult.

There are two unrecorded examples of *C. m. lypura* in the British Museum obtained by Captain W. H. Dunn in the Haraza hills of northern Kordofan in November 1902.

Cercomela scotocerca scotocerca.

Saxicola scotocerca Heuglin, Orn. N.O.-Afr. i. Sept.? 1869, p. 363 : Keren.

Ruticilla fuscicaudata Blanford, Ann. Mag. N. H. (4) iv. Nov. 1869, p. 329.

Cercomela scotocerca scotocerca (Heugl.) ; Neumann & Zedlitz, J. f. O. 1913, p. 367.

Bradyornis pumilus (nec Sharpe), Butler, Ibis, 1908, p. 236.

[B. coll.] 3 Erkowit Mch. R.S.

[C. & L. coll.] 3 Erkowit Mch. Apl. R.S.

The question of the priority of Heuglin's and Blanford's names for this species seems a little doubtful. Heuglin (Orn. N.O.-Afr. ii, p. 81) in his supplement claims that his name was published in September, but the titlepage of the volume bears the date November 1869; Blanford's was published in the November number of the Annals & Mag. N. H.

Œnanthe œnanthe œnanthe.

Saxicola œnanthe œnanthe (Linn.) ; Hartert, Vög. pal. Faun. p. 679 ; Butler, Ibis, 1908, p. 234, 1909, p. 83.

[B. coll.] 1 Gedaref Apl. Kas ; 1 Roseires Apl. Sen. ; 2 Khartoum Apl. May ; 1 Fachi Shoya Nov. W.N. ; 1 Mayik Jan., 1 Gadein Jan., 1 Raffali Feb., 1 Wau Apl. B.G. ; 1 Mongalla, 2 Giggling Oct., 2 Bor Oct. Mon. ; 1 Iado Feb.

[C. & L. coll.] 8 between Lake No and Bahr el Zeraf Feb. U.N.

[Chr. coll.] 2 Meridi Feb. B.G. ; 1 Yei Dec. L.E.

These Wheatears are rather larger than the ordinary European birds. The wings of adult males average 98, some reaching 103 mm.

The dates of capture extend from October to May 7. A common winter bird according to Butler.

Enanthe isabellina.

Saxicola isabellina Cretzschmar, Atlas Rüpp. Reise, 1826, p. 52 : Nubia ; Hartert, Vög. pal. Faun. p. 691 ; Butler, Ibis, 1905, p. 339, 1908, p. 235, 1909, p. 83.

[B. coll.] 3 Khartoum Nov. Feb. ; 1 Wau Jan. B.G. ;
1 Rejaf Feb. L.E.

[C. & L. coll.] 2 Port Sudan Dec. R.S. ; 1 White Nile
lat. 14° Jan. W.N. ; 1 Jebel Zeraf Feb. U.N.

Enanthe heuglini.

Saxicola heuglini Hartl. & Finsch in Heuglin's Orn. N.O.-Afr. 1869, p. 346 : Gondar ; Reichw. V. A. iii. p. 720 ; Butler, Ibis, 1905, p. 339, 1908, p. 234.

[B. coll.] 1 Gedaref May, Kas. ; 1 Khartoum July ;
1 Malakal Jan. U.N. ; 1 Mayik Jan. B.G.

[C. & L. coll.] 13 nr. Jebel Zeraf Feb., 1 Tonga Feb.
U.N.

Among the birds collected by Messrs. Chapman & Lynes are several young examples in the spotted plumage ; they differ from the adults in having the shoulders and wing-coverts spotted with rufous, and the tips of the primaries and secondaries and the edges of the latter edged with rufous ; below, the edges of the breast-feathers are dusky, forming crescentic marks.

There are examples of this species in the Museum from the Sobat river and other localities on the White Nile, but not from Abyssinia whence the type is said to have come. On the other hand, *E. bottæ*, its larger representative, seems to be confined to the higher elevations of the Abyssinian plateau, and we doubt its occurrence in Sennar as recorded by Heuglin.

Enanthe xanthoprymna xanthoprymna.

Saxicola xanthoprymna Hemprich & Ehrenberg, Symb. Phys. 1833, fol. dd : Nubia.

Saxicola xanthoprymna H. & E.; Hartert, Vög. pal. Faun. p. 693.

[C. & L. coll.] 1 Port Sudan Dec. R.S.

There are only four other examples of this rare Chat in the Museum, three from Egypt dated February and March and one collected by Chalmley (*vide* Ibis, 1897, p. 204) at Ras Rowaya north of Port Sudan in February, where he states it was not uncommon.

It is probably only a winter bird, breeding in Arabia or elsewhere.

***Enanthe xanthoprymna cummingi*.**

Saxicola cummingi Whitaker, Bull. B. O. C. x. 1899, p. 17: Fao.

Saxicola xanthoprymna cummingi Hartert, Vög. pal. Faun. p. 693.

[B. coll.] 1 Jebel Kerbosh, 1 Jebel Okokreb Mch. R.S.;
1 Bir Nurayet Nov. Ber.

[C. & L. coll.] 3 Port Sudan Dec., 1 Sinkat Mch.
R.S.

Of this Chat the Museum possessed only two examples previously. One the type, from Fao, the other the type of *Saxicola hawkeri* O.-Grant (Bull. B. O. C. xxi. 1908, p. 94) from Berber. There seems to be no doubt that this latter is a rather dark-coloured female of this race. The skin has obviously been cleaned up and repaired, which may account for the dark coloration. How far the distinguishing character of these two races—namely, the colour of the base of the tail-feathers, white in *Æ. x. xanthoprymna*, rufous in *Æ. x. cummingi*—holds good, we are by no means certain, as the two Butler birds from the Red Sea Province are somewhat intermediate.

***Enanthe lugens persica*.**

Saxicola persica Seebohm, Cat. Bds. B. M. v. 1881, p. 372: Shiraz, Persia; Hartert, Vög. pal. Faun. p. 696.

[B. coll.] 1 Bir Shigrib, 1 Bir Likeit Nov. Ber.

There seem to be three races of *Æ. lugens* as follows:—

1. *Æ. l. HALOPHILA*. White on inner web of primaries not extending to the shaft. Back of head in adults clean white or nearly so. Wing averages 90 mm.

Range. Algeria, Tripoli, and Cyrenaica.

2. *Æ. l. LUGENS*. White on inner web of primaries extending to shaft. Otherwise like *Æ. l. halophila*, but slightly larger. Wing 89–96 mm.

Range. Palestine to Egypt.

3. *Æ. l. PERSICA*. Very like *Æ. l. halophila*, with very little white on the primaries, but with a darker back to the head in adults and usually redder under tail-coverts. Size larger, wing usually over 95 mm. The white on the primaries is usually not so pure.

Range. E. Persia etc. to Egypt and the Sudan in winter. All the Egyptian specimens before us with little white on the primaries are referable to this race and not to *Æ. l. halophila*, though this last-named race is said to have been obtained in Egypt by Nicoll.

Cenanthe hispanica melanoleuca.

Muscicapa melanoleuca Gldenstdt, Nov. Comm. Petrop. xix. 1775, p. 468, pl. 15 : Georgia, Caucasus.

Saxicola aurita and *S. melanoleuca* apud Butler, Ibis, 1905, pp. 338, 339, 1908, p. 234, 1909, p. 398.

[B. coll.] 2 Port Sudan Apl., 7 Gebeit Meh., 1 Khor Arbat May, 1 Halfaia Meh. R.S.; 9 Khartoum Oct. Feb. Meh. Apl.; 1 Fachi Shoya Nov., 1 Hillet Abbas Dec. W.N.; 1 Jebel Ahmed Aga Feb. U.N.

[C. & L. coll.] 3 Sennar Dec., 4 Kamisa Dec. Sen.; 1 White Nile lat. 14° N. W.N.; 1 Tonga Feb., 1 Melut Jan. U.N.

Both white-throated and black-throated males are found among these Chats, and we presume that they must now be regarded as phases or dimorphic forms of the same species. The evidence certainly seems very strong.

Ænanthe leucomela leucomela.

Saxicola pleschanka pleschanka (Lepechin); Hartert, Vög. pal. Faun. p. 688.

Saxicola pleschanka Butler, Ibis, 1905, p. 339, 1908, p. 235.

Ænanthe leucomela (Pall.); B. O. U. List Brit. Birds, p. 103.

[B. coll.] 2 Port Sudan, Apl. R.S.; 5 Khartoum Mch. Oct. Nov.; 1 Kawa Nov. W.N.

[C. & L. coll.] 1 Singa, 1 Kamisa Dec. Sen.; 1 White Nile lat. 14° N. Jan.

We do not regard Lepechin's names as truly binomial, and prefer to use Pallas's, which was published in the same volume and the same year, about 80 pages further on.

Ænanthe monacha.

Saxicola monacha Temm.; Hartert, Vög. pal. Faun. p. 701.

This Chat, distinguished at once by its tail, the outer feathers of which are white or nearly white, is stated by Hartert to have occurred at Suakim, while the type came from Nubia. It is not represented in the Butler or Chapman and Lynes collections.

Koenig (Verhandl. V. Intern. Orn. Kongr. Berlin, 1911, p. 540) states that he met with a pair (♀ at Serkernalto 31/i./03, ♂ at Koyeka 2/ii./03) between Wadi Halfa and Khartoum.

Ænanthe deserti atrogularis.

Saxicola atrogularis Blyth, J. A. S. B. 1847, p. 131: N. India.

Saxicola deserti atrogularis Hartert, Vög. pal. Faun. p. 684.

Saxicola deserti Temm.; Butler, Ibis, 1905, p. 339, 1908, p. 235.

[B. coll.] 15 N. Berber Prov. (various localities) Nov.; 1 Kamobsana Mch. R.S.; 1 Blue Nile winter; 8 Khartoum, Nov. Dec. Feb.

[C. & L. coll.] 4 Port Sudan Dec., 2 Sinkat Mch. R.S.;
2 nr. Sennar Jan., 1 Kamisa Dec. Sen.; 1 El Dueim
Jan. W.N.

All these Desert Wheatears were taken in winter, and appear to belong to the eastern race, though one or two specimens show some approach to the smaller and more rufous form resident in northern Africa; we have no evidence that the Desert Wheatear ever breeds in the Sudan, and the examples taken in March by Capt. Lynes are ticketed "sexual organs very small."

Ænanthe lugentoides.

Saxicola lugentoides Seebohm, Cat. Bds. B. M. v. 1881, p. 371: Sennar.

This Chat has not apparently been met with in the Sudan since it was collected by Botta in 1839. There is a large series in the Museum from southern Arabia.

Ænanthe sennaarensis.

Saxicola sennaarensis Seebohm, Cat. Bds. B. M. v. 1881, p. 391: Sennar.

This bird, which is described by Seebohm as closely resembling *Ænanthe familiaris* of South Africa, is only known from the type in the Paris Museum, said to have been obtained by Botta in Sennar about 1839. The locality is probably a wrong one, as is also the case with several other species such as *Ænanthe lugentoides*, which was stated by Botta to come from Sennar, but which has since only been found in southern Arabia.

Ænanthe leucopyga.

Saxicola leucopyga (Brehm); Hartert, Vög. pal. Faun. p. 699.

Saxicola leucopygia Butler, Ibis, 1908, p. 235, 1909, p. 398.

[B. coll.] 12 Khor Arbat Apl. May, 6 Jebel Bawati May, R.S.

[C. & L. coll.] 6 Sinkat Mch., 1 Erkowit Apl. R.S.

Family TIMELIIDÆ.

Argya rubiginosa rubiginosa.

Crateropus rubiginosus Rüpp. Syst. Übers. 1845, p. 47, pl. 18: Ali Amba, Shoa.

[B. coll.] 3 Mongalla July–Sept., 1 Sheik Tombé May,
3 Bor Jan. & summer, Mon.

There seem to be two recognizable races of this bird:—

1. A. R. RUBIGINOSA (Rüpp.). From the White Nile and Abyssinia to inland German and British East Africa.

Synonyms of this are:

Crateropus rufescens Heugl. J. f. O. 1863, p. 24: Upper Bahr el Abiad.

Argya rufula Heugl. Orn. N.O.-Afr. iv. Appendix, p. ccexiii.

Argya rubiginosa emini Reichw. O. M. 1907, p. 30: Unyamwesi, G.E.A.

We can see no difference between birds from the White Nile, Abyssinia, and the Masai country.

2. A. R. HEUGLINI.

Argya heuglini Sharpe, Cat. Bds. B. M. vii. 1883, p. 391: Zanzibar.

From southern Somaliland to the coasts of British and German East Africa.

A much richer coloured bird, especially the underside, which is all one shade of rich rufous, and does not get paler on the belly.

Synonyms are: *Argya saturata* Sharpe, P. Z. S. 1895, p. 488: Zanzibar. And possibly

Argya sharpii Grant & Reid, Ibis, 1901, p. 662: Shebeli.

There has been much confusion about the names and races of these two birds. Rüppell first described the first race from Shoa. Later, in 1863, Heuglin described the same bird, which he believed to be a different form, under the name *Crateropus rufescens* from the upper White Nile; subsequently, finding the specific name *rufescens* was already preoccupied by the use of it for an Indian species by Blyth,

he changed the name in the index of the Orn. N.O.-Afr. to *C. rufula*.

In the meantime Sharpe, in the Catalogue, not realizing that Heuglin had already suggested a substitute name, proposed to call Heuglin's bird after him—*Argya heuglini*; unfortunately he did not describe Heuglin and Rüppell's bird, but the darker coast bird, so that the name *heuglini* corresponds to the description, but not to the synonymy or the distribution given in the Catalogue of *A. heuglini*. In 1895, when describing Dr. Donaldson Smith's collection from western Somaliland, he identified a bird from the Shebeli in south Somaliland with Rüppell's species; distinguished it by its larger size and rather different appearance from the birds of the upper White Nile, and also gave a new name *A. saturata* to his own *A. heuglini*.

Finally, Ogilvie-Grant and Reid (*Ibis*, 1901, p. 661), when describing the Pease collection from southern Abyssinia, after identifying the Pease birds with Rüppell's original *A. rubiginosa*, gave a new name (*A. sharpii*) to the Shebeli bird collected by Donaldson Smith on the strength of its larger size and slightly different markings. Unfortunately the Shebeli bird is not in the Museum, and it cannot therefore be compared with the other two races, and until this can be done it must remain a doubtful form. In response to our inquiries Mr. Witmer Stone has been good enough to search for it in the Museum of the Academy of Sciences at Philadelphia, but, although the bulk of Dr. Donaldson Smith's first Somali collection went to Philadelphia, the Shebeli Babbler was not among them.

Argya acaciæ.

Sphenura acaciæ Licht. Verz. Doubl. 1823, p. 40: Nubia.

Argya acaciæ Butler, *Ibis*, 1905, p. 330, 1908, p. 228, 1909, p. 395.

[B. coll.] 1 Port Sudan May, 2 Jebel Bawati May,
1 Erkowit Mch. R.S.

[C. & L. coll.] 3 Port Sudan Dec. Apl., 4 near Sinkat
Mch. R.S.

Crateropus plebeius plebeius.

Ixos plebejus Cretzschmar, Atlas zu der Reise, 1826, p. 35, pl. 23 : Kordofan.

Crateropus plebeius plebeius (Cretzsch.); Neumann, J. f. O. 1904, p. 548.

Crateropus cordofanicus Butler, Ibis, 1905, p. 330, pl. vii. : Kordofan.

[B. coll.] 1 Jebel Melbis Apl. Kor. [type of *C. cordofanicus* Butler].

There can be no doubt whatever that this bird, described by Butler as new, is identical with that originally described by Cretzschmar from Rüppell's collection in Kordofan. It was previously known only from the two types in the Senckenberg Museum in Frankfurt, and a third example in the Berlin Museum.

Crateropus plebeius cinereus.

Crateropus cinereus Heuglin, SB. Akad. Wien, xix. 1856, p. 282 : White Nile from 6° N.L. ; id. J. f. O. 1862, p. 300.

Crateropus plebeius cinereus Heugl. ; Neumann, J. f. O. 1904, p. 548.

Crateropus plebeius apud Butler, Ibis, 1908, p. 228, 1909, p. 81.

[B. coll.] 1 Baval Jan., 1 Ukanda Jan., 1 Wau Apl. B.G. ;
1 Mongalla Jan. ; 3 Rejaf Feb. Apl. L.E.

[Chr. coll.] 2 Meridi Feb., 2 Yambio Mch., 1 Wau July-Aug. B.G. ; 5 Yei Nov. Dec. L.E.

Distinguished at a glance from *C. p. plebeius* by its considerably darker coloration.

Crateropus leucocephalus leucocephalus.

Turdoides leucocephalus Cretzschmar, Atlas zu der Reise, 1826, p. 6, pl. 4 : Sennar.

Crateropus leucocephalus leucocephalus Neumann, J. f. O. 1904, p. 549.

Crateropus leucocephalus Butler, Ibis, 1905, p. 330.

[B. coll.] 1 Gallabat May, Kas. ; 2 Roseires July Aug. Sept. Dec., 1 Soleil Apl. Sen.

[C. & L. coll.] 2 Kamisa Dec. Sen.

Cratéropus tenebrosus.

Crateropus tenebrosus Hartl. Zool. Jahrb. 1887, p. 313, pl. 12: Kudurma, S.E. Bahr el Ghazal.

[Chr. coll.] 1 Mt. Baginzi, Meh. B.G.

This is a very rare Babbler in collections, only some half dozen others being known. Mr. Butler states that it is quite a common bird in the vicinity of Kajo Kaji, in the Lado Enclave.

Crateropus leucopygius.

Crateropus leucopygius (Rüpp.) ; Reichw. V. A. iii. p. 115.

Heuglin (Orn. N.O.-Afr. i. p. 391) met with this species at Gallabat on the borders of the Abyssinian highlands.

The examples in the Museum are all from Abyssinia or Eritrea.

Ptyrticus turdinus.

Ptyrticus turdinus Hartl. J. f. O. 1883, p. 425: Tamaja, Upper Welle distr.; id. Zool. Jahrb. 1887, p. 315, pl. 11; Reichenow, V. A. iii. p. 675.

[Chr. coll.] 2 Yambio Meh., 1 Mt. Baginzi Meh. B.G.

Three examples of this rare bird were secured by Dr. Christy. He mentions that it frequents khor bottoms in parties of half a dozen or so, and makes a loud clucking noise, all the party joining in. The Museum previously possessed only two examples of this species, both collected on the Kibali river, one of the head-waters of the Welle, in July 1906, by Boyd Alexander.

Family PYCNONOTIDÆ.**Pycnonotus tricolor minor.**

Pycnonotus nigricans var. *minor* Heugl. Orn. N.O.-Afr. i. p. 398: Upper White Nile.

Pycnonotus tricolor minor (Heugl.) ; Reichenow, V. A. iii. p. 421 ; Butler, Ibis, 1908, p. 228, 1909, p. 81.

[B. coll.] 1 Bahr el Ghazal Jan., 1 nr. Tonj Jan., 1 Kojali Feb., 1 Doleiba May, B.G. ; 1 Lake No Feb. U.N. ;

3 Mongalla July-Sept., 1 Abu Kika May, 1 Kenisa summer, Mon.; 1 Lado Feb. L.E.

[C. & L. coll.] 3 nr. Tonga Feb. U.N.

[Chr. coll.] 3 Yei Nov. L.E.

Pycnonotus barbatus arsinöë.

Turdus arsinöë Licht. Verz. Doubl. 1823, p. 39 : Fayoum.

Pycnonotus arsinöë (Licht.) ; Reichenow, V. A. iii. p. 420 ; Butler, Ibis, 1905, p. 331, 1909, p. 395.

[B. coll.] 3 Khartoum Nov. Feb.; 2 Roseires Aug. Sept. Sen.

[C. & L. coll.] 1 Port Sudan Dec., 3 Erkowit Apl. R.S.; 1 White Nile lat. 12° N. W.N.

The White Nile bird in the Chapman & Lynes collection and one of the Erkowit birds are both nestlings. We can give no further information as to the respective ranges of this species and *P. t. minor* in the Sudan. The farthest north for the latter species is Kodok (Fashoda), as we are informed by Mr. Butler. The only bird which could give us a clue, one from lat. 12° N. on the White Nile, happens to be a practically complete albino!

We have looked over all the African examples of *Pycnonotus*, and as our conclusions differ slightly from those of Hartert (Nov. Zool. xiii. p. 389) and Zedlitz (J. f. O. 1916, p. 68), we give them for what they are worth.

We prefer to regard the white-vented group as a distinct species, and include under this group *P. b. gabonensis* with a slight wash of yellow on the vent; but they all form a very compact group spread over northern and western Africa. If this is done the type-species of the yellow-vented group will be *P. tricolor*. It is also noteworthy that eastern races of *P. tricolor* have blacker heads than the central and western forms, but this distinction is not sufficiently sharply cut to warrant calling them distinct species.

As pointed out by Hartert the wattle-eyed form *P. nigricans* occurs side by side with *P. t. layardi*. It also occurs as well with *P. capensis* in certain localities, and we therefore prefer to consider the latter as a distinct species.

Closely related to *P. nigricans* come *P. xanthopygos* and *P. x. reichenowi* from Palestine and Arabia: as, however, there is so great a gap in the distribution, we think it advisable to consider these also as forming distinct species.

We have therefore the following species and races in the Ethiopian Region:—

a. White-vented or with a faint wash of yellow only.

P. barbatus barbatus (Desf.). Morocco to Tunis.

P. b. inornatus (Fras.). Senegal to Niger.

P. b. gabonensis Sharpe. Cameroon to Gaboon.

P. b. arsinoë Licht. Egypt to Kordofan, Khartoum, and Roseires.

P. b. schoanus Neum. Eritrea to Shoa.

P. b. somaliensis Reichw. N. Somaliland.

b. Yellow-vented, without eye-wattle.

P. tricolor tricolor Hartl. N. Damaraland to Congo and Uganda; of this we believe *P. t. tanganicæ* Reichw. and *P. t. phæocephalus* Mearns are synonyms.

P. t. layardi Gurney. Eastern South Africa to Nyasaland. We cannot distinguish *P. t. pallidus* Roberts, though we have not seen the type.

P. t. ngamii O.-Grant. Lake Ngami distr.

P. t. micrus Oberholser. Coastlands of German and British E. Africa westwards to Kilimanjaro.

P. t. fayi Mearns. Highlands of western British E. Africa to Elgon; type locality Fay's farm, 8000 ft. There is a large series of birds which we identify with this form in the British Museum. They are considerably larger than *P. t. micrus* and are darker on the head than *P. t. tricolor* from Uganda. Wing-measurements 90 to 100 mm. and over, average about 97 mm. The wing of *P. t. micrus* averages under 90 mm.

P. t. minor Heuglin. Upper White Nile.

- c. Yellow-vented, and with a scaly appearance owing to white edging to the feathers of breast and back.

P. dodsoni Sharpe. S. Somaliland and desert country of British East Africa to Kilimanjaro region. *P. spurius* Reichw. from Gallaland and *P. t. peasei* Mearns from Kitunga, B.E.A., are described as being intermediate between this species and *P. layardi*. We cannot identify these two forms.

d. Yellow-vented and wattle-eyed.

P. nigricans nigricans (Vieill.). Cape Colony to Damara-land, Transvaal, and Natal.

P. nigricans harterti Zedlitz (J. f. O. 1916, p. 71). Benguela. This form has a wattled eyelid, although not so distinct as that in *P. n. nigricans*, and undoubtedly belongs to this group.

P. xanthopygos xanthopygos (Hempr. & Ehr.). Sinai and Palestine.

P. xanthopygos reichenowi Lorenz & Hellm. S. Arabia.

P. capensis (Linn.). Cape Colony. This species has the colour of the head absolutely uniform with the back, and the whole underside is very much duskier than any other form. It stands therefore rather by itself.

Phyllastrephus strepitans rufescens.

Phyllastrephus rufescens Hartlaub, Orn. Centralb. 1882, p. 91 : Lado district.

[Butler coll.] 2 Rejaf Feb. L.E.

We are unable to distinguish the various forms of *P. strepitans* recognized by Zedlitz, except *P. s. pauper* from Abyssinia, which is markedly more reddish. The others, *P. s. strepitans* from Mombasa, *P. s. sharpei* from Dar-es-Salaam, and *P. capensis suahelicus* from south German East Africa, all seem very similar to our bird ; if it is distinct it should be named as above.

Phyllastrephus flavicollis flavigula.

Trichophorus flavigula Cab. Orn. Centralb. 1880, p. 174:
Angola.

[B. coll.] 1 Tembura Mch. B.G.

[Chr. coll.] 1 Yambio Mch., 5 Meridi Jan. Feb. B.G.

We very much doubt if this is really *T. flavigula* of Cabanis. We have, however, no specimens from Angola, and as Reichenow states that Angola birds are identical with those from Cameroon, and as our birds are undoubtedly the Cameroon form and not the Uganda form, we are compelled to adopt this name.

The races of this species appear to be—

1. P. F. FLAVICOLLIS Swains. Senegal to Togoland.

Throat bright yellow, underside very dark brown.

2. P. F. FLAVIGULA Cab. Angola to Cameroon and eastwards to Bahr el Ghazal.

Throat very pale yellow, underside greyish brown tinged with yellow, lighter in the middle.

3. P. F. PALLIDIGULA Sharpe. Uganda to Nyasaland and N. Rhodesia.

Throat pale yellow, but not so pale as in last race, underside brown strongly washed with olive and yellow, paler in the middle. *X. f. shelleyi* Neum. J. f. O. 1900, p. 292, is a synonym.

There are also two birds in the British Museum collection from near Lake Bangweolo which do not agree exactly with this form, but are nearer *P. f. flavigula*, only without the paler centre line along the abdomen.

Phyllastrephus scandens orientalis.

Xenocichla orientalis Hartl. J. f. O. 1883, p. 425: Tomaja, Upper Welle.

[Chr. coll.] 1 Yambio Mch. B.G.

The smaller and paler race of *P. scandens* to which this bird belongs extends westwards to Cameroon and Northern

Nigeria. *P. scandens scandens* occurs from Senegal to Southern Nigeria, and, according to Reichenow, to eastern Cameroon and Gaboon. All the Cameroon specimens before us, however, belong to the present easterly race.

We do not know of any previous record of any of these three species of *Phyllastrephus* from within the limits of the Anglo-Egyptian Sudan.

Family CAMPEPHAGIDÆ.

Campephaga phœnicea.

Ampelis phœnicea Lath. Ind. Orn. i. 1790, p. 367 : Africa.

Campephaga phœnicea (Lath.) ; Reichw. V. A. ii. p. 521 ; Butler, Ibis, 1909, p. 81.

[B. coll.] 8 Roseires July–Sept. Sen. ; 1 Mongalla Jan.,
2 Sheik Tombé summer, Mon. ; 1 Lado Feb. L.E.

[Chr. coll.] 5 Yambio Mch., 4 Mt. Baginzi Mch.,
1 Meridi Feb., 4 Wau July Aug. B.G.

One of the birds collected by Dr. Christy at Wau is of the yellow-shouldered form (*C. xanthornoides* Less.). We are satisfied that it is merely a variation and not a species (cf. Neumann, J. f. O. 1916, p. 146).

Coracina pectoralis.

Graucalus pectoralis Jardine & Selby, Ill. Orn. ii. 1828, pl. 57 : Sierra Leone ; Butler, Ibis, 1908, p. 225, 1909, p. 80.

Coracina pectoralis (J. & S.) ; Reichenow, V. A. ii. p. 515.

[B. coll.] 2 Jebel Fazogli May, Sen. ; 1 Katta Jan.,
1 Raffali Feb., 1 Chak Chak Mch., 2 Wau Jan. Mch.
B.G.

[Chr. coll.] 1 Meridi Feb., 11 Mt. Baginzi Mch. B.G.

Family MUSCICAPIDÆ.

Alseonax gambagæ.

Alseonax gambagæ Alexander, Bull. B. O. C. xii. 1901, p. 11 : Gambaga, Gold Coast hinterland.

[C. & L. coll.] 1 Kamisa Dec. Sen.

This bird also occurs in Somaliland (where it was described as *Muscicapa somaliensis* by Bannerman) and in southern Arabia as well as in the Shari country about Lake Chad.

It has not previously been recorded from the Sudan.

Alseonax aquaticus

Muscicapa aquatica Heuglin, J. f. O. 1864, p. 256 : Wau ; Butler, Ibis, 1909, p. 83.

Alseonax aquaticus (Heugl.) ; Reichenow, V. A. ii. p. 456.
[B. coll.] 1 Kojali Feb. B.G.

***Alseonax infulatus*.**

Muscicapa infulata Hartlaub, P. Z. S. 1880, p. 626 : Upper White Nile, probably Magungo or Wadelai.

Alseonax infulatus (Hartl.) ; Reichenow, V. A. ii. p. 457.
[C. & L. coll.] 1 near Tonga, 3 9½° N. lat., 30-40° E.
long. Feb. U.N.

There are examples of this species from Wadelai (*Emin*) and from several places in Uganda in the Museum, but it does not appear to have been previously known from so far north. It is new to the Sudan, and was not met with by Butler. The labels state that it inhabits the papyrus and acts like a Flycatcher.

***Melænornis pammelaina*.**

Sylvia pammelaina Stanley in Salt's Abyss. App. 1814, p. 59 : Abyssinia.

Melænornis pammelaina (Stanley) ; Reichw. V. A. ii. p. 441.

Melænornis edolioides (Swains.) ; Butler, Ibis, 1905, p. 340, 1908, p. 236, 1909, p. 83.

[B. coll.] 1 Gallabat May, Kas. ; 2 Blue Nile Apl. May, Sen. ; 1 Wau Jan., 1 Chak Chak Mch. B.G. ; 1 Kajo Kaji Apl. L.E.

[Chr. coll.] 4 Meridi Feb., 3 Yambio Mch. B.G. ; 5 Yei Nov. Dec. L.E.

We are inclined to agree with Ogilvie-Grant, Ibis, 1913, p. 638, that Reichenow was right in uniting *M. schistacea*

Sharpe with this species. We can also find no distinction whatever between these birds and specimens from West Africa (*M. edolioides* Swainson). *Bradyornis diabolicus* of Sharpe Cat. Birds, iii. 1877, p. 314, was founded partly on adults of this species and partly on immature examples of *M. ater*.

Bradornis griseus.

Bradyornis griseus Reichw. J. f. O. 1882, p. 211: Mgunda Mkali, German E. Africa; id. V. A. ii. p. 438.

[B. coll.] 2 Mongalla Jan. & summer, 1 Shambé Nov. Mon.

Three races of this bird are recognized by Zedlitz (J. f. O. 1915, p. 41). They appear to be only distinguished by size. We find that there is great variation in size in all localities, measurements ranging from 73–85 mm. both in northern Somaliland and in southern British East Africa. *B. pumilus* Sharpe has already been pointed out to be a synonym by Ogilvie-Grant, Ibis, 1913, p. 632. We can see no justification for recognizing any races.

Bradornis pallidus pallidus.

Muscicapa pallida Müller, Naumannia, 1851, Heft iv. p. 28: Kordofan.

Bradyornis pallidus subalaris Sharpe, P. Z. S. 1873, p. 713: Mombasa; Grant, Ibis, 1913, p. 633.

Bradyornis pallidus (Müll.); Rothschild, Bull. B. O. C. xxxiii. 1913, p. 65; Butler, Ibis, 1905, p. 340, 1908, p. 236, 1909, p. 83.

[B. coll.] 3 Roseires Aug. Sen.; 1 Taufkia Apl. U.N.; 1 Pongo river Feb., 2 Chak Chak Feb. Mch., 3 Wau Mch. Apl., 1 Ukanda Jan. B.G.; 1 Bor, 1 Shambé Nov. Mon

[C. & L. coll.] 5 Kamisa Dec. Sen.; 7 between Sobat river-mouth and Lake No Jan. Feb. Mch. U.N.

[Chr. coll.] 3 Meridi Jan. Feb., 1 Tembura Apl. B.G.; 2 Yei Nov. L.E.

As was shown by Rothschild, *B. p. subalaris* is a synonym

of *B. pallidus*, and a new name is required for the northern race, called by Grant *B. pallida*. This Rothschild named *B. p. sharpei*.

With regard to *B. granti* Bannerman (Bull. B. O. C. xxvii. 1911, p. 84: Gibbe river in south Abyssinia), we find that it is founded on what we believe is the summer plumage of a bird indistinguishable in the winter season from *B. pallidus* of the Sudan. In the Sudan and the low country the bird does not appear to undergo such a marked seasonal change, though there are distinct traces of it.

Two of the examples from Kamisa collected by Capt. Lynes have a note attached to the ticket stating that they are parent and young and pointing out that the young bird is in the dark plumage of *B. granti*, and the old bird is passing from the light plumage of *B. pallidus* to the darker one of *B. granti*, though neither of them is as dark as the typical Abyssinian birds become in summer.

All the adult so-called *B. granti* were collected in the summer months.

Whether the stronger seasonal plumage-change of the Abyssinian bird is sufficient to justify its recognition as a separate race we must leave undecided for the present, but we are quite satisfied that the Sudan birds are all the true *B. p. pallidus*.

Empidornis semipartitus semipartitus.

Muscicapa semipartita Rüppell, N. Wirbelth. 1835, pl. 40: Gondar, Abyssinia.

Empidornis semipartitus (Rüpp.); Reichenow, V. A. ii. p. 447; Butler, Ibis, 1908, p. 237.

[B. coll.] 1 Amin nr. Meshra el Rek Jan., 4 Gadein Jan. Apl., 1 Gameiza Jan. B.G.; 9 Mongalla July-Sept., 1 Giggig May, 1 Sheik Tombé, Mon.; 2 Lado Feb. L.E.

[C. & L. coll.] 3 mouth of Sobat river Jan., 1 White Nile 9½° N. 31° E. Feb. U.N.

These birds seem rather small for Neumann's *E. s. kavi-rondensis* from Uganda, and although there are no examples

in the Museum from Abyssinia or from the Lake districts of Uganda with which to compare them, we believe that they must be identified with the typical race.

Muscicapa striata striata.

Muscicapa striata striata (Pall.) ; Hartert, Vög. pal. Faun. p. 475.

M. grisola auct.

[B. coll.] 1 Khor Arbat May, R.S. ; 1 Roseires Apl. Sen. ; 2 Khartoum Oct. ; 1 Shambé Nov. Mon.

[Chr. coll.] 2 Yambio Mch. B.G. ; 1 Yei Nov. L.E.

These Spotted Flycatchers appear to belong to the western European race rather than to *M. s. naumanni*, which is said to winter in eastern Africa.

Common and widely distributed on passage, but most birds pass through to farther south (*A. L. B.*).

Muscicapa atricapilla semitorquata.

Muscicapa semitorquata E. v. Homeyer, Zeitschr. ges. Orn. ii. 1885, p. 185 : Caucasus.

Muscicapa atricapilla semitorquata Hom. ; Hartert, Vög. pal. Faun. p. 483.

Muscicapa atricapilla apud Butler, Ibis, 1905, p. 340, 1908, p. 236.

[B. coll.] 1 Khartoum Oct. ; 1 Taufikia Apl. U.N.

Both these Flycatchers are females or quite young birds, and appear to us to be referable to the eastern form of the Pied Flycatcher breeding in Asia Minor and Persia, as are other Egyptian examples in the British Museum collection.

Muscicapa collaris.

Muscicapa collaris Bechst. ; Hartert, Vög. pal. Faun. p. 483.

Koenig (Verhandl. V. Intern. Orn. Kongr. 1910, p. 537) reports a single female from Shendi in March. The female of this species is so like that of *M. atricapilla semitorquata* that we cannot admit this bird to the Sudanese list without further confirmation.

Muscicapa parva.

Muscicapa parva Bechst.; Hartert, Vög. pal. Faun. p. 485.

Mr. Butler mentions that, while fishing one day in a stream near Chak Chak in the Bahr el Ghazal, a Red-breasted Flycatcher settled on a stone within a few feet of him. It was in all probability this species, whose winter quarters are at present hardly known.

Hyliota flavigastra flavigastra.

Hyliota flavigastra Swainson, Birds W. Africa, ii. 1837, p. 47: Senegal; Reichw. V. A. ii. p. 473; Butler, Ibis, 1908, p. 236.

[B. coll.] 1 Moyen, 1 Katta Jan., 1 Pongo R. Mch. B.G.;
1 Kajo Kaji Apl. L.E.

[Chr. coll.] 2 Mt. Baginzi Mch., 1 Wau, B.G.

These specimens appear to be identical with the typical race from West Africa.

Parisoma plumbeum.

Stenostira plumbea Hartlaub, J. f. O. 1858, p. 41: Casamanze river, Senegal.

Parisoma plumbeum (Hartl.); Reichenow, V. A. iii. p. 521.

[B. coll.] 2 Chak Chak Feb., 1 Katta Jan. B.G.; 1 Abab,
1 Shambé Mch. Mon.; 1 Rejaf Feb. L.E.

[Chr. coll.] Mt. Baginzi Mch. B.G.

This species has a wide distribution from Senegal and the upper White Nile south to the Transvaal. One race, *P. p. orientale*, is recognized by Reichenow from Brit. E. Africa, and, though we do not find that the distinctions in regard to the white on the tail mentioned by Reichenow are of great value, the birds from Uganda and farther south are certainly rather a deeper bluish grey than those of our series and from southern Abyssinia. The Sudan birds at any rate are identical with the typical race, the type of which is in the British Museum.

Parisoma blanfordi blanfordi.

Sylvia blanfordi Seebohm, P. Z. S. 1878, p. 979: Rairo, Eritrea; Butler, Ibis, 1909, p. 397.

Parisoma blanfordi Reichw. V. A. iii. p. 522.

Sylvia monus (nec H. & E.), Butler, Ibis, 1908, p. 231.

[B. coll.] 3 Erkowit Mch. Apl., 1 Khor Arbat May, R.S.

[C. & L. coll.] 4 Erkowit Apl., 17 Sinkat Mch. R.S.

This large series enables us to settle several vexed questions in regard to this bird. It undoubtedly breeds in the Red Sea Province. With respect to the genus to which this form should be referred, Seebohm made it a *Sylvia*, from which, however, it differs in having a very long outer primary just under half the length of the second (*i. e.* averaging 20 and 45 mm.); the second is short as compared with most of the true *Sylvias*, indeed, it is about equal to the eighth or even shorter.

In these characters our bird agrees with *Parisoma*, but in general coloration it closely resembles *Sylvia*, and in fact it seems to bear the same relation to *Sylvia* that *Calamocichla* does to *Acrocephalus*.

The series before us is undoubtedly identical with the type collected at Rairo by Blanford, but appears to be quite distinct from the Somaliland bird. Hartert has recently (Nov. Zool. xxiv. 1917, p. 459) distinguished the southern Arabian bird.

We find that in most respects the Arabian bird resembles the Sudan bird, being only distinguished by its slightly larger size and slightly darker colour. So close are they that we should not have been inclined to separate them, but, on the other hand, the Somaliland form is obviously distinct, and we would shortly diagnose the three forms as follows:—

PARISOMA BLANFORDI BLANFORDI Seebohm, *supra*.

Wing of type 65, of males 67–70, of females 64–67 mm.; back an ashy brown, contrasting rather markedly with the black head and nape.

Distribution. Red Sea coast from Port Sudan to Eritrea.

PARISOMA B. DISTINCTA Hartert, Nov. Zool. xxiv. 1917, p. 459: Gerbe, S. Arabia.

Wing of males 68–70, of females 66–68 mm.; back a little darker brown, not contrasting so strongly with the darker head.

Distribution. S. Arabia.

PARISOMA B. SOMALIENSIS, subsp. n.

Wing ♂ 64–67, ♀ 65 mm. Back distinctly greyer than in either of the two other forms. The tail also is much whiter, the outer web of the outer tail-feather almost completely white, while in the Arabian and typical birds the white forms only a narrow line along the outer edge of the outer web.

Type, a male from Mundara, Somaliland, collected by R. M. Hawker, 9/xi./97. B.M. reg. no. 98/6/13/76.

Distribution. Somaliland.

Chloropeta massaica umbriniceps.

Chloropeta natalensis umbriniceps Neumann, Orn. Monatsb. 1902, p. 10: Omo river; Reichenow V. A. ii. p. 465.

[Chr. coll.] 1 Meridi Feb. B.G.; 1 Yei Nov. L.E.

These birds, though not quite adult, are undoubtedly identical with birds in the Museum from southern Abyssinia, Uganda, and the highlands of British East Africa. Whether they are really distinct from the true *C. massaica* Fisch. & Reichw., the type-locality of which is Kilimanjaro, we cannot say as we have no examples from there with which to compare them.

C. batesi Sharpe (Ibis, 1905, p. 468: Cameroon) appears to be another member of this group of brown-headed forms, which we prefer to keep apart from the *C. natalensis* group (vide Ibis, 1917, p. 385).

Batis bella chadensis.

Batis chadensis Alexander, Bull. B. O. C. xxi. 1908, p. 105: Lake Chad.

Batis orientalis (nec Heugl.), Butler, Ibis, 1905, p. 341 part, 1908, p. 236, 1909, p. 399.

[B. coll.] 1 Erkowit, 1 Erba Mch. R.S.; 3 Roseires May, Sept. Sen.; 1 Bahr el Homar Mch. W.N.; 2 Jebel Melbis Apl. Kor.; 1 Chak Chak Feb. B.G.

[C. & L. coll.] 3 Sinkat Mch., 1 Erkowit Apl. R.S.; 3 Kamisa Dec. Sen.; 2 Jebelein Jan., 1 White Nile $12\frac{1}{2}^{\circ}$ N. lat. Jan. W.N.; 2 Jebel Ahmed Aga Jan. U.N.

Batis bella nyanzæ.

Batis minor nyanzæ Neum. J. f. O. 1907, p. 354: Kun Mtessa, Uganda.

Batis orientalis (nec Heugl.), Butler, Ibis, 1905, p. 341, part, 1909, p. 83.

[B. coll.] 1 Malakal Apl., 1 Bahr el Zeraf June, U.N.; 5 Mongalla summer; 1 Tonj Jan., 2 Raffali Feb., 1 Wau Mch. B.G.; 1 Kajo Kaji Apl. L.E.

[C. & L. coll.] 1 nr. Melut Jan., 4 nr. Lake No Feb. Mch. U.N.

[Chr. coll.] 5 Meridi Feb., 1 Yambio Mch. B.G.; 2 Yei Nov. L.E.

In naming these specimens we found it necessary to examine all the birds of this group from the northern half of Africa, and we found that in most cases we agreed with Neumann's revision of the genus (J. f. O. 1907, pp. 348-358).

He, however, uses the name *minor* for the group to which the Sudanese forms belong, but we find that *Pachyprora bella* Elliot, Publ. Field Columb. Mus. Orn. Ser. vol. i. 1897, p. 47: Le Gud, Somaliland, is the oldest name. We have not seen the type, but we have birds from almost exactly the same locality which agree perfectly with the description, and there is no doubt that they are of the same group as *B. minor*.

There are, therefore, two groups which occur side by side in north-east Africa, *B. orientalis* Heugl. and *B. bella* Elliot. Of these *B. orientalis* can be distinguished at a glance by the lighter brown, much wider, and less sharply

marked off breast-band of the females, and we have no evidence that it has ever occurred in the Sudan.

Three races of *B. bella* converge in the Sudan—*B. b. chadensis* Alex. from Lake Chad, *B. b. nyanzæ* Neum. from Uganda, and *B. b. erlangeri* Neum. from Abyssinia.

B. b. chadensis ranges through Kordofan and the north-western Bahr el Ghazal to the lower White and Blue Niles and on to Port Sudan. It is distinguished by its paler coloration in both sexes on the head and back.

B. b. nyanzæ ranges north from Uganda to about Malakal on the upper White Nile and through the central and southern Bahr el Ghazal. It may be distinguished from the last race, with which it intergrades, by the darker coloration of the head and back, especially in the males.

B. b. erlangeri ranges from Abyssinia down the Sobat, Baro, and Blue Nile rivers just into the Sudan, where it intergrades with the other forms. We are not at all certain as to how far it is distinct from *B. b. nyanzæ*, but as a rule the female appears to lack the reddish tinge or collar on the nape which both the last races possess. We have no examples which we can definitely assert to be of this race, but the birds from Roseires in the Butler collection, which we have placed under *B. b. chadensis*, are intermediate between that form and the present race.

Platysteira cyanea nyanzæ.

Platysteira cyanea nyanzæ Neum. J. f. O. 1905, p. 210 : Bukoba.

[B. coll.] 3 Pitias nr. Rejaf Apl. L.E.

[Chr. coll.] 2 Meridi Jan., 1 Tembura Apl. B.G.

In his revision of the races of this species (J. f. O. 1905, p. 210) Neumann remarks that *P. c. æthiopica* of Abyssinia, only distinguishable from the present race by its smaller size, occurs on the upper Blue Nile. It may therefore extend into the Sudan. We consider that *P. albifrons*, from Angola, which he treats as a race of *P. cyanea*, is entitled to specific rank owing to its very distinct female. Both the present race and *P. c. æthiopica* are distinguished

from the typical race of West Africa by the presence of a white frontal band in the female.

Tchitrea viridis.

Tchitrea viridis (St. Müller) ; Reichenow, V. A. ii. p. 504.

Terpsiphone cristata (Gm.) ; Butler, Ibis, 1905, p. 341, 1908, p. 237, 1909, p. 83.

[B. coll.] 5 Roseires May, July, Sept. ; 1 Jebel Maba Apl. Sen. ; 2 Renk Mch. May, 1 Malakal Nov., 3 Bahr el Zeraf June, U.N. ; 4 Wau Jan. Apl., 1 Kojali Feb., 5 Tembura Mch. B.G. ; 1 Shambé Jan., 3 Mongalla Jan. July, 1 Giggling, 1 Kenisa Jan., 1 Sheik Tombé Jan. Mon. ; 1 nr. Rejaf Apl. L.E.

[C. & L. coll.] 3 Kamisa Dec. Sen. ; 3 White Nile 9½° to 10¾° N.I. Jan. Feb. U.N.

[Chr. coll.] 8 Mt. Baginzi Mch., 5 Meridi Jan. Feb., 2 Tembura Apl., 1 Wau, B.G. ; 4 Yei Nov. Dec. L.E.

The adult males of Paradise Flycatchers from the Bahr el Ghazal have grey under tail-coverts, and are somewhat more richly coloured with more gloss below. They appear to approach the race *T. v. duchaillui* Cass. from Gaboon, and there are no wholly white-backed males among this series, though there is one example with the back intermingled black and white. So far as we know *T. v. duchaillui* is the only race which ever gets a completely black back in the adult.

The birds from the Nile valley proper and Sennar have white under tail-coverts in the adult males, and the red-backed, white-tailed birds, which are the predominant form among the Bahr el Ghazal series, are quite absent, the white-backed, white-tailed adults being abundant. This we take to be identical with the typical West African race (*T. v. viridis*). They do not resemble the Abyssinian form, *T. v. ferreti*, which appears to moult straight from the short-tailed young bird into the white adult, whereas in the Sudanese series we have the intermediate long-red-tailed, red-backed stage.

We have examined the large series of Paradise Flycatchers in the British Museum, and although we failed to come to any satisfactory conclusions in regard to definite races, there are some points which may be worth recording.

In South Africa there appear to be two species occurring together, one, *T. perspicillata*, with a metallic glossy head, and the other, *T. plumbeiceps*, without. The latter appears to range westwards to northern Angola, where it merges into, or is replaced by *T. melampyra* (Hartlaub, Orn. W. Afr. 1857, p. 89: Gaboon=*rufocinerea* auctorum). The other form, with a glossy head, occurs throughout Africa to southern Arabia, and the oldest name for it is *T. viridis* St. Müll. In South Africa this bird is always red, and the adult males have long red tails, but as it goes northward white and partially white forms appear. In German East Africa and Uganda the white forms seem to occur, though in the latter country the red form, or often a red form with white shoulders and outer webs to the secondaries, is predominant. In Abyssinia, on the other hand, the adult males apparently always have white backs and long white tails. It seems probable that the same applies to those from northern West Africa (*i. e.*, Gold Coast and Senegambia). In Gaboon and Cameroon, alongside *T. melampyra*, a form with a white-backed and white-tailed adult male also occurs, but in this form the white is sometimes partially replaced by black. There seems to be no definite geographical range to any coloured form, but the tendency to white is undoubtedly northern, and the tendency to red southern.

With regard to the plumage changes, we are of the opinion that it takes at least three years for a male to acquire adult plumage, except in the case of the Abyssinian race, *T. v. ferreti*, where it probably only takes two. Of the forty-seven males from the Sudan before us, fourteen have short red tails and a varying amount of white on the outer webs of the wing-feathers. These we take to be first-year birds. Seven have long red or mixed red and white tails. These we take to be second-year birds. The remaining twenty-six have long white, or black and white, tails. These

we take to be adults. About half of these have pure white backs, and mainly come from the northern part of the country; the remainder have chestnut, or chestnut mixed with deep blue, backs, and mainly come from the southern portion. These latter have a large amount of black in the tail, generally all the feathers except the long central ones being black; but we take this to be a western characteristic, and in no way connected with age. Two birds also from Sennar have short red and white tails, and backs chestnut sprinkled with white. They are probably almost typical *T. v. ferreti*, which appears to adopt a white plumage direct from the red short-tailed dress of the first year.

***Elminia longicauda teresita*.**

Elminia teresita Antinori, Cat. Uccelli, 1864, p. 50: Djur, Bahr el Ghazal; Butler, Ibis, 1908, p. 237, 1909, p. 83.

[B. coll.] 2 Tembura Mch. B.G.

[Chr. coll.] 4 Meridi Feb. B.G.; 4 Yei Nov. Dec. L.E.

On examining the material in the British Museum, we came to the following conclusions as regards the races:—

1. *ELMINIA LONGICAUDA LONGICAUDA* Swains. Underside darker, more bluish.

Range. Senegal to North Nigeria.

2. *ELMINIA L. TERESITA* Ant. Underside paler, white on the belly.

Range. Bahr el Ghazal to Cameroon and Uganda; also to Mount Elgon.

3. *ELMINIA L. SCHWABISCHI* Oustalet, N. Arch. Mus. Paris (3) iv. 1892, p. 216: Franceville, interior of Gaboon.

Of this bird we know nothing beyond the description, which does not appear to distinguish it from *E. l. teresita*.

4. *ELMINIA L. LOANDÆ*, subsp. nov.

There are in the Museum five very brightly coloured examples of this group which appear to be quite distinct, and we propose to name them as above.

Nearest *E. l. teresita* but a much brighter blue above ; below, the throat and chest are also bright blue instead of a dull greyish blue as in *E. l. teresita*. The white of the abdomen is both clearer and more sharply defined. Wing, 64 to 68 mm.

Type, a male collected by W. J. Ansorge at N'Dalla Tando, in northern Angola, 7/viii./1908. B.M. reg. no. 1910/5/6/542.

We regard *Elminia albicauda* Boc., ranging from Benguella to Nyasaland, as a distinct species.

Family HIRUNDINIDÆ.

Delichon urbica urbica.

Hirundo urbica urbica Linn. ; Hartert, Vög. pal. Faun. p. 807.

Hirundo urbica Butler, Ibis, 1905, p. 343, 1909, p. 399.

[B. coll.] 2 Khartoum Apl.

One of these birds, both of which are males, reaches the quite exceptional wing-measurement of 116 mm.; the other is normal, being 111 mm.

Common on passage in autumn and spring from Khartoum to Lado (*A. L. B.*).

Riparia riparia riparia.

Riparia riparia riparia (Linn.) ; Hartert, Vög. pal. Faun. p. 811.

Cotile riparia (Linn.) ; Butler, Ibis, 1905, p. 343, 1908, p. 237, 1909, p. 399.

[B. coll.] 1 Khartoum Apl.

Throughout the Sudan in winter (*A. L. B.*).

Riparia riparia littoralis.

Cotyle littoralis Heuglin, Orn. N.O.-Afr. i. 1869, p. 166 ; Dongola.

Riparia riparia littoralis (Heugl.) ; Hartert, Vög. pal. Faun. p. 812.

Cotile shelleyi Sharpe; Butler, Ibis, 1905, p. 343, 1908, p. 238.

[B. coll.] 2 Khartoum Dec.

[C. & L. coll.] 1 Lat. 15°, 1 Lat. 12½° N. Jan. W.N.;
1 nr. Renk Jan. U.N.

Riparia paludicola minor.

Cotyle minor Cabanis, Mus. Hein. i. 1850, p. 49: N.E. Africa.

Riparia paludicola minor (Cab.); Hartert, Vög. pal. Faun. p. 813.

[B. coll.] 1 Roseires Sept. Sen.

[C. & L. coll.] 2 Singa Dec. Sen.

The two specimens collected by Chapman and Lynes are both quite immature, but we believe we are right in referring them to this species and not to *R. r. littoralis*.

Riparia paludicola sudanensis.

Cotile sudanensis Alexander, Bull. B. O. C. xxi. 1908, p. 88: Bulturi, Lake Chad.

Cotile minor apud Butler, Ibis, 1905, p. 343, 1908, p. 237, 1909, p. 84.

[B. coll.] 2 Raffali, Feb. B.G.

On examining the specimens of *R. paludicola* in the Museum we have come to the following conclusions as regards the races:—

1. **RIPARIA PALUDICOLA PALUDICOLA.**

Hirundo paludicola Vieill. Nouv. Dict. xiv. 1817, p. 511: S. Africa.

Above uniform brown, also throat and chest; underside white, washed with brown on the flanks. Size large: wing 102–110 mm. Some specimens have the whole underside brown like the chest.

Range. South Africa north to the Zambesi on the east and Benguela on the west.

Riparia pembertoni Hartert, from Angola, is apparently

a distinct species and not a race of *R. paludicola*. Our Benguella specimens are in every way typical examples of the latter.

2. *RIPARIA P. DUCIS*.

Riparia ducis Reichw. O. M. 1908, p. 81: Ruanda.

? *Riparia paludicola dohertyi* Hartert, Bull. B. O. C. xxv. 1910, p. 95: Mau, British E. Africa.

? *Riparia nigricans* Madarász, Ann. Mus. Nat. Hung. 1911, p. 339: German E. Africa.

Considerably darker, especially on the back and top of the head, than the last race. Size smaller: wing 95–102, average 98 mm.

Range. Central and eastern Africa.

We have no means of knowing whether there is more than one race in these districts, Reichenow's description of *R. ducis* not affording much information to workers who are unable to examine his types.

3. *RIPARIA P. MINOR*.

Cotyle minor Cabanis, Mus. Hein. i. 1850, p. 49: N.E. Africa.

Paler than the last race, very like *R. p. paludicola* in colour, but the throat and chest paler brown. Size as in last race or slightly larger: wing, average 99 mm.

Range. Abyssinia and upper Blue Nile.

We are inclined to regard Cabanis's name as best applied to the Abyssinian bird, his wing-measurement of $3\frac{3}{4}$ German inches (= 102 mm.) appearing to belong to an Abyssinian bird.

4. *RIPARIA P. SUDANENSIS*.

Cotile sudanensis Alexander, Bull. B. O. C. xxi. 1908, p. 88: Lake Chad.

A paler race than the last and slightly smaller, though there are larger specimens in the collection than those mentioned by Alexander. Wing 90–98, average 95 mm.

Range. Lake Chad to the Bahr el Ghazal and White Nile.

Riparia cincta cincta.

Hirundo cincta Bodd. Tabl. Pl. Enl. 1783, p. 45 : Cape of Good Hope (ex Daubent.).

Riparia cincta (Bodd.) ; Reichw. V. A. ii. p. 384.

[B. coll.] 2 Mongalla, summer.

These birds appear to be somewhat intermediate between the typical race of South Africa and *R. c. erlangeri* Reichw. from Shoa, which only differs in its larger size. The wing-measurements of our birds are 132 and 136 mm. *R. c. cincta* is stated by Reichenow to measure 126–134 mm., and *R. c. erlangeri* 135–146 mm.

Riparia obsoleta.

Cotyle obsoleta Cabanis, Mus. Hein. i. 1850, p. 50 : N.E. Africa.

Riparia obsoleta obsoleta (Cab.) ; Hartert, Vög. pal. Faun. p. 816.

Ptyonoprogne obsoleta (Cab.) ; Butler, Ibis, 1908, p. 238.

[B. coll.] 1 Erkowit Mch. R.S.

[C. & L. coll.] 2 Sinkat Mch. R.S.

These birds are not as dark as *R. pusilla* of Zedlitz from Eritrea, or as *R. arabica* Reichenow from southern Arabia. On the other hand, they are slightly darker than some of the Egyptian birds, and their relations to each other and to the *fuligula* and *rupestris* groups are rather obscure. The simplest plan is either to regard *R. obsoleta* as a distinct species or group them all together as races of *R. rupestris*. We think the former plan most satisfactory at present, until we know more of their inter-relations.

Riparia fuligula rufigula.

Cotile rufigula Fischer & Reichenow, J. f. O. 1884, p. 53 : Naiwascha, B.E.A.

Riparia rufigula (Fisch. & Reichw.) ; Reichenow, V. A. ii. p. 400.

[B. coll.] 1 Kajo Kaji Mch. L.E.

This bird does not appear to have been previously obtained

in the Egyptian Sudan ; it is known from British East Africa and Uganda across to Lake Chad and Nigeria.

We regard as races of *R. fuligula* the following :—

R. f. fuligula (Licht.). *Distr.* Cape Colony, Natal, and the Transvaal.

R. f. anderssoni (Sharpe & Wyatt). *Distr.* S.W. African Protectorate.

R. f. rufigula (Fisch. & Reichw.). *Distr.* Tropical Africa as above.

R. f. pusilla Zedlitz. *Distr.* Eritrea.

Through the last-named this group is connected with the *obsoleta* and *rupestris* groups.

Riparia rupestris.

Riparia rupestris (Scop.) ; Hartert, Vög. pal. Faun. p. 815.

A single example of the Crag-Martin was obtained by Witherby (Ibis, 1901, p. 259) at Jebel Auli, about 25 miles south of Khartoum on the east bank of the White Nile. There are no Sudanese examples in the British Museum.

Hirundo rustica rustica.

Chelidon rustica rustica (Linn.) ; Hartert, Vög. pal. Faun. p. 800.

Hirundo rustica Linn. ; Butler, Ibis, 1905, p. 341, 1908, p. 238, 1909, p. 399.

[B. coll.] 1 Khartoum Apl. 12 ; 1 Mongalla, 1 Kenisa Oct. Mon. ; 2 Lado Feb.

[C. & L. coll.] 1 Tonga Mch. 3, U.N.

A common winter visitor to the Sudan. The specimen obtained by Captain Lynes had nearly completed its moult, the tail is still sprouting, and the under parts are washed with pale rufous.

Hirundo æthiopica.

Hirundo æthiopica Blanford, Ann. & Mag. Nat. Hist. (4) iv. 1869, p. 329 : Barakit, Tigré, N. Abyssinia ; Reichw. V. A. ii. p. 406 ; Butler, Ibis, 1905, p. 341, 1908, p. 238, 1909, p. 84.

[B. coll.] 1 Gedaref Apl. Kas. ; 2 Roseires Aug. Sept. Sen. ; 3 Khartoum Mch. May Dec. ; 1 Mongalla summer ; 2 Meshra el Rek May, B.G.

[C. & L. coll.] 1 Tonga Mch. U.N.

This is the northern representative of *H. albigularis* Strickl. of South Africa. As, however, there are no connecting geographical forms between that species and the present one, and as they are very clearly distinct, we prefer to regard this as a species and not a subspecies.

Widely distributed and resident (*A. L. B.*).

Hirundo smithi.

Hirundo smithii Leach, Tuck. Voy. Congo, App. 1818, p. 407 : Chisalla Island, Congo ; Reichw. V. A. ii. p. 410 ; Butler, Ibis, 1905, p. 342, 1908, p. 238.

[B. coll.] 4 Roseires Aug. Sept. Sen. ; 1 Shendi Feb. Ber. ; 1 Mongalla summer ; 1 Chak Chak Feb. B.G.

[Chr. coll.] 1 Meridi Feb. B.G.

Hirundo puella unitatis, subsp. nov.

[B. coll.] 3 Kajo Kaji Mch. L.E.

Oberholser has pointed out that the typical race of this Swallow is confined to northern West Africa (Pr. U.S. Nat. Mus. xxviii. 1905, p. 933), and he uses Guérin's *H. abyssinica* for the race from the rest of Africa. Unfortunately, however, on examining the large series in the British Museum, it at once became evident that the Abyssinian bird is again distinct, and that the best known race inhabiting central, south, east, and west Africa requires another name. *H. korthalsi* Bp. Consp. i. p. 340 is founded on a bird from an unknown locality. We propose, therefore, the name *H. p. unitatis*, subsp. n.

Type, a male from Pinetown, Natal, collected 15 October by H. Ayres. B.M. reg. no. 85/9/1/13. Named in honour of the Union of South Africa.

The races then are:—

1. *HIRUNDO PUELLA PUELLA* Temm. & Schl.

Striping on underside much finer and often with a rufous wash on the sides of the breast. Smaller: wing 95–102 mm.

Range. Gold Coast, etc.

2. *HIRUNDO P. ABYSSINICA* Guér.

Striping very slightly coarser and not thick on the belly, underside very plainly white. Size larger: wing 105–110 mm.

Range. Abyssinia.

3. *HIRUNDO P. UNITATIS*, subsp. n.

Striping very much coarser and more thickly applied, underside as much black as white. Size large: wing 105–115 mm.; wing of type 107 mm.

Range. South Africa north to British East Africa, the Congo, Uganda, and the Lado Enclave.

Hirundo domicella.

Hirundo domicella Hartl. & Finsch, Vög. Ostaf. 1870, p. 140: Casamanse, Senegal; Reichw. V. A. ii. p. 420; Butler, Ibis, 1908, p. 239.

[B. coll.] 3 Bor Apl. Oct. Mon.; 2 Bahr el Ghazal Jan.; 1 Lado Feb., 1 Kajo Kaji Meh. L.E.

This bird is the Sudanese and West African representative of *H. melanocrissa* Rüpp. of Abyssinia and of *H. daurica* Linn. of Asia. As, however, it is quite distinct from those species and no intermediate forms are found, we prefer to keep it as a species.

Hirundo semirufa gordonii.

Hirundo gordonii Jardine, Contr. Orn. 1851, p. 111: Gold Coast; Reichw. V. A. ii. p. 418.

[B. coll.] 1 Giggling May, Mon.; 1 Kajo Kaji Apl. L.E.

Hirundo senegalensis senegalensis.

Hirundo senegalensis Linn. Syst. Nat. 12th ed. 1766, p. 348: Senegal; Reichw. V. A. ii. p. 415; Butler, Ibis, 1905, p. 342.

[B. coll.] 4 Roseires July Aug. Sen.; 1 Jebel Melbis Apl. Kor.

Hirundo griseopyga griseopyga.*Hirundo griseopyga* Sund. ; Reich. V. A. ii. p. 403.

This species is stated by Phillips (Bull. Mus. Comp. Zool. Cambridge, vol. lviii. 1913, p. 16) to have been found breeding by him at Fazogli in January. They make long burrows in hard level ground horizontally a few inches below the surface. It is also reported from Wau in the Bahr el Ghazal by Heuglin (Orn. Nordost-Afr. i. p. 150).

Hirundo daurica rufula.*Hirundo rufula* Temm. ; Reichw. V. A. ii. p. 421.

Is also reported by Phillips (*op. cit.*) from Abiad on the Dinder river in February. It is surprising that this bird has not been met with oftener in the Sudan. Heuglin mentions that A. E. Brehm secured one example in Nubia, and one was collected by Hawker at Fashoda in March, *fide* O.-Grant.

Psalidoprocne albiceps.*Psalidoprocne albiceps* P. L. Slater, P. Z. S. 1864, p. 108, pl. 14 : Uzinza, G.E.A. ; Reichw. V. A. ii. p. 430.[B. coll.] 6 Kajo Kaji Apl. **L.E.**

After this portion of our paper was in print, Mr. Robert Gurney, M.B.O.U., most kindly forwarded for our inspection a small collection of birds made by him in the spring of 1914 at or near Meroë on the Nile, a few miles north of Shendi in the Berber Province.

The collection is an interesting one, as there are but few specimens from this neighbourhood in the Butler collection. The passerine birds include an example of *Ploceus v. vitellinus* (see p. 437), a subspecies not represented in the Butler collection, though it occurs apparently throughout the Sudan. There are examples collected by Heuglin in Sennar in the Museum, and it was obtained by Messrs. N. C. Rothschild and Wollaston at Shendi (Ibis, 1902, p. 12). The non-passerine birds will be mentioned in their appropriate places.

EXPLANATION OF PLATE X.

Fig. 1. *Cisticola lugubris marginata*. ♂. Malakal, U.N., 31/v./09.

2. " " " ♀. Fashoda, U.N., 9/i./07.

These two figures show the great seasonal change in the coloration and in the length of the tail in this species.

Fig. 3. *Cisticola natalensis malzacii*. ♂. Wandi, L.E. (Emin coll.), 7/ix./85.

4. " " " ♂. Chak Chak, B.G., 8/iii./07.

The seasonal plumage-change is as marked in this subspecies as in *C. l. marginata*.

Fig. 5. *Cisticola erythrops erythrops*. ♂. Ruwenzori, Uganda, 28/iv./06.

6. " " *roseires*. ♂. Roseires, Sen., 19/iv./11.

7. " *terrestris eximia*. ♂. Bahr el Zeraf, U.N., 4/ii./14.

These figures illustrate the characters of the new subspecies.

Fig. 8. *Cisticola rufigeops scotoptera*. ♀. Mongalla, summer/09.

9. " " " ♂. Sennar, vii./09. [Type of *C. floweri* Hartert.]

10. " " " ♀. Fashoda, 9/i./07.

11. " " " ♂. Roseires, 21/iv./11.

These figures show the successive plumage-changes in this species. Fig. 8 represents the full summer-dress; fig. 9 is the same bird in late summer-dress, the tail has moulted and the new winter tail is not quite fully-grown, the head is also freshly moulted but not the back. Fig. 10 is the full winter-dress with the striped back and the long tail now fully grown; and fig. 11 represents the bird in worn winter-plumage just before assuming the summer-dress.

XXXIII.—Obituary.

WILLIAM VINCENT LEGGE.

As was briefly announced in the last number of 'The Ibis,' Col. W. V. Legge, Col.M.B.O.U., died on 25 March last at Cullenswood House, St. Mary's, his home in Tasmania, in his seventy-eighth year.

Born also at Cullenswood in 1840, Legge was the son of Robert Vincent Legge. He was brought to England when a

child, and was educated at Bath and also in France and Germany. He passed into the Royal Military Academy at Woolwich in 1860, and two years later obtained a commission in the Royal Artillery.

He served for several years in England, and in 1867 was stationed at Melbourne in Australia, which was then garrisoned with Imperial troops. From 1868 to 1877 he was in Ceylon, and it was during his service in this island that most of his ornithological work was done. He made large collections of birds and travelled extensively throughout the island, and also reorganized the Colombo Museum. He returned to England in 1877, and in 1883 he retired from the Imperial service with the rank of Lieutenant-Colonel, having been appointed by the Tasmanian Government Commandant of the local military forces of that island. He held this post from 1883 to 1890 and again from 1898 to 1902, when he finally retired and settled on his ancestral estate.

The earliest of Legge's publications in ornithology which we have found is a letter to 'The Ibis' of 1866 remarking on the abundance of nesting Redshanks in south-east Essex, and is dated from Shoeburyness, where he was no doubt quartered at that time. From 1874 to 1878 he communicated several papers and notices to 'The Ibis' on Ceylonese birds and their distribution especially in the hilly region in the south of the island, and this culminated in the publication of the 'Birds of Ceylon,' a large quarto volume of 1238 pages with 34 plates illustrating the birds peculiar to the island and a map showing the faunal districts. This work, which was issued in three parts between 1878 and 1880, was well received and much praised at the time of its issue, and was reckoned one of the most complete and successful monographs of a limited avifauna. It is still the standard work on Ceylon birds and has not been superseded. For the preparation of this work Col. Legge amassed a fine collection of Ceylonese birds, a large proportion of which he presented to the National Museum at South Kensington.

After his return to Tasmania he sent a short paper to

'The Ibis' (1888, p. 93) on the *Acanthizæ* of Tasmania, and in the 'Papers and Proceedings of the Royal Society of Tasmania' for 1886 he published his "Systematic List of Tasmanian Birds." A revised edition of this list was printed in the same journal for the years 1900-1901.

In 1904 he was President of the Australasian Association for the Advancement of Science, and delivered an address at Dunedin in New Zealand on "The zoogeographical relations of the Ornis of the various subregions of the Australian region, with the geographical distribution of the principal genera therein"—a valuable and thoughtful paper. He also wrote on geological and anthropological subjects.

Col. Legge was elected a Colonial Member of the B. O. U. in 1903. He was also member of the Royal Society of Tasmania, and of the Royal Australian Ornithological Union, of which he was an original member and the first President.

He was twice married, and is survived by two sons, both now in Australia.

ROBERT OLIVER CUNNINGHAM.

From the 'Morning Post' of 27 July last we learn of the death of Dr. R. O. Cunningham, who, though never a member of the Union, made some contributions to the pages of 'The Ibis' in its earlier years.

Born about 1840, Dr. Cunningham obtained his medical education at Edinburgh, at the University of which he gained his M.D. degree in 1864. In 1866 he was appointed Naturalist to H.M. Surveying Ship 'Nassau,' commissioned to explore and map out the Straits of Magellan and the adjoining waters of the Patagonian coasts; and on his return in 1869 he published a charming volume containing an account of his experiences, 'Notes on the Natural History of the Straits of Magellan and the West Coast of Patagonia.'

After his return from South America he was for some years Professor of Natural History and Geology at Queen's College, Belfast, but of late he lived in retirement at Paignton in Devonshire, where he died.

His first paper in 'The Ibis' (1866, p. 1) is a learned

history of the Solan Goose from the earliest times, and is supplemented by his own observations on the habits of the bird on the Bass Rock.

During his voyage to Magellan Straits he sent three interesting letters to 'The Ibis' for 1868-69, and the birds which he collected and sent home were named and commented on by P. L. Selater and Osbert Salvin in the same volumes. His collections were ultimately deposited in the Museum at Cambridge.

After his return to England he wrote two papers on the anatomy of certain Kingfishers and on the osteology of *Rhea americana* and *Rhea darwini* for the 'Proceedings of the Zoological Society' for 1870 and 1871, and a more important memoir "On some points in the Anatomy of the Steamer Duck (*Micropterus cinereus*)" in the Transactions of the same Society (vol. vii. 1871, pp. 493-501, pls. Iviii.-lxii.).

L. BERESFORD MOURITZ.

We have only recently learnt that Mr. L. B. Mouritz, who enlisted as a private in the 2nd Australian Light Horse at the commencement of the war, and who was reported missing during the Gallipoli fighting, was subsequently declared killed in action on 14 May, 1915, by a Court of Enquiry which sat to determine his fate.

Mr. Mouritz, about whom we regret to say we have very little information, was an Australian and a mining engineer by profession. His business took him to South Africa, where he resided for some time at Bulawayo. He wrote an important paper for 'The Ibis' (1915, pp. 185-216 and 534-571) on the ornithology of the Matopo district near Bulawayo, and another on his observations in Katanga, Belgian Congo, while on a prospecting expedition in that country under Anglo-Belgian auspices (Ibis, 1914, pp. 26-38), and these papers show that he was very familiar with African birds and an excellent observer.

He was elected a member of the Union in 1912, and is the 15th member that the Union has lost through the war.

XXXIV.—*Notices of recent Ornithological Publications.**Bangs' recent papers.*

[Notes on a collection of Surinam Birds. By Outram Bangs and Thomas E. Penard. Bull. Mus. Comp. Zool., Cambridge, Mass., lxii. 1918, pp. 25-93.]

[Vertebrata from Madagascar. Aves. By Outram Bangs. Ibid. lxi. 1918, pp. 489-511.]

[Notes on the Geographical races of *Tangara gyroloides*. By Outram Bangs. Proc. New Engl. Zool. Club, vi. 1917, pp. 73-76.]

[Description of a new Woodpecker from Peru. By Outram Bangs and G. K. Noble. Ibid. pp. 85-86.]

In the first paper an extensive collection of nearly 2000 specimens, representing 301 species of birds, made in the vicinity of Paramaribo in Dutch Guiana for the Cambridge Museum is described by the two authors. After a short introduction describing the three zones—alluvial, savanna, and highlands—into which the country may be divided, a list of species follows with taxonomic remarks. A number of new forms from Surinam, as well as from other parts of South America, are described, viz.:—*Milvago chimachima cordata* Panama, *Rupornis magnirostris insidiatrix* Colombia, *Herpetotheres cachinnans chapmani* Mexico, *Aramides cajanea latens* Panama, *Chæmepelia arthuri* Surinam, *Pulsatrix perspicillata trinitatis* Trinidad, *Ceophlæus lineatus improcerus* Bahia, *Chætura brachyura prævelox* St. Vincent, *Lipaugus simplex frederici* Surinam, *Placostomus coronatus gunia* Surinam, *Pitangus lictor panamensis* Panama, *Troglodytes musculus paramaribensis* Surinam, *Stelgidopteryx ruficollis cacabatus* Surinam, *Ostinops viridis flavesceus* Peruvian Amazons, *Tanagra olivacea mellea* Peru, *Sporophila minuta centralis* Panama, *Saltator olivascens brewsteri* Trinidad, *Myospiza humeralis tucumanensis* Argentina.

Two new genera are proposed, *Helicolestes* for *Fulco hamatus* Illiger, and *Hypocnemoides* for *Hypocnemis melanopogon* Sel. In addition a number of old names are revived and recognized, and several changes made in present nomenclature.

The second paper deals with a collection of birds made

by Mr. F. R. Wulsin in Madagascar, consisting of 1065 skins belonging to 122 species and subspecies. Four of these are here described for the first time, namely, *Æna capensis aliena*, *Phalacrocorax africanus pictilis*, *Anhinga vulsini*, *Agapornis madagascariensis ablactanea*. The collection also contained four adult examples of *Monias benschi*, a curious form believed by Hartert to be allied to the Rails. Mr. Bangs, from the evidence of the powder-down patches, suggests a relationship to *Mesites*.

The Blue-rumped Tanager, *Calospiza* or *Tangara gyroloides*, has had a somewhat checkered career, so far as nomenclature is concerned. Mr. Bangs, in his third paper, discusses the taxonomic history of the species and recognizes four races, one of which, *T. g. nupera* from western Ecuador, is new; the type-locality of the type-species, following Hellmayr, is considered to be Colombia.

The last paper on the list explains itself. The new Woodpecker is named *Chrysoptilus atricollis lymani*, and was obtained in north-western Peru.

Beebe on the Pheasants.

[A monograph of the Pheasants by William Beebe. In four volumes. Vol. i. pp. i-1+1-190, 20 col. plates, 15 photogravures, 5 maps. London (Published under the auspices of the New York Zoological Society by Witherby & Co.), 1918: large 4to.]

The first volume of Capt. Beebe's long-promised work on the Pheasants is now before us. It is a most sumptuous production. The size, the illustrations, the paper, and the print are all of the very best that could be obtained, and the contents justify the casket, for Capt. Beebe has not only had a great deal of experience with Pheasants in captivity in the New York Zoological Park, but he has travelled for many months in eastern Asia, exploring the haunts of the wild birds, and has spent another six months in studying the collections of skins in the Museums of London, Tring, Paris, and Berlin.

It is to Col. Anthony R. Kuser, of Bernardsville, New Jersey, to whom the volume is dedicated, that we owe this

work, for it was he who suggested that the monograph should be undertaken, and has supported both the exploration and subsequent publication in a most complete manner.

The present volume commences with a short introduction, containing a historical notice and an account of Capt. Beebe's new classification of the group, which is based on the method and order of the moult of the tail-feathers: thus he distinguishes the true Pheasants, including *Gallus*, as a subfamily Phasianinæ by the fact that the moult of the tail proceeds from the outer feathers inwards, while in the case of *Ithagenes* and *Tragopan* which he unites with the Partridges as a subfamily Perdiciinæ, the moult of the rectrices is from the central pair of feathers outwards. In the Argus Pheasant and its allies the moult begins with the third from the central pair and proceeds inwards and outwards, and in the Peafowl with the sixth pair from the centre, and these are regarded as forming a third and a fourth subfamily.

Other sections of the introduction relate to the voice, flight, gait, food, protective colouring and sexual display, and in a final paragraph dealing with the relations to man it is pointed out how much danger there is of these very beautiful but comparatively stupid and easily trapped birds being exterminated, partly by the demands of the plumage trade and partly by the adoption by the Chinese of a meat diet, while up to the period of the outbreak of the war thousands of Pheasants were imported frozen from eastern Asia into western Europe by the game-dealers to satisfy the demands of the epicures of London and Paris.

The present volume deals with the eleven forms of Blood-Partridge (*Ithagenes*), six Tragopans, three Impeyans or Monáls, and three Eared Pheasants.

The accounts given of each species or subspecies are very complete, and where the author has had opportunities of seeing the birds in their native wilds full of suggestive observations. On the whole Capt. Beebe is very restrained in the recognition and multiplication of subspecies, but we notice he adheres to the distinctness of his *Ithagenes cruentus*

affinis of Sikkim from *I. c. cruentus* of Nepal, notwithstanding the protests of Mr. Baker (Ibis, 1915, p. 124).

We would add one other criticism. Lady Impey, after whom the Monál or Impeyan Pheasant was named by Latham, was not the wife of the first Governor of Bengal, but of Sir Elijah Impey, the first Chief Justice of Bengal, well known to all students of Anglo-Indian history.

The illustrations in colour are by various English and American artists, and are not only beautiful works of art, but have been most successfully reproduced, some of them, alas, in Berlin! For eight of the plates Mr. G. E. Lodge is responsible, for six Mr. Thorburn, for four Mr. Grönvold, and for one the American artist, Mr. C. R. Knight.

The homes and feeding-grounds, and in some cases the nests and eggs of the various species are illustrated with a series of fine photographs, all taken by the author during his travels and beautifully reproduced by photogravure. There are also a series of maps to show the distribution of the species of each genus. We can only conclude this brief and inadequate notice by congratulating Capt. Beebe on having produced a magnificent work of art as well as a most valuable contribution to our knowledge of one of the most resplendent families of birds. We look forward with pleasant anticipation to the appearance of the other three volumes.

Dwight on the Junco.

[The geographical distribution of colour and of other variable characters in the genus *Junco*: a new aspect of specific and subspecific values. By Jonathan Dwight, M.D. Bull. Amer. Mus. N. H. xxxviii. 1918, pp. 269-309; 3 col. pls., 5 maps.]

This is an important paper which should be studied by all systematic ornithologists, since in it Dr. Dwight endeavours to define more clearly what we mean by a subspecies as opposed to a species. It is also a plea for more consideration before adding to the growing number of new names. As he truly says, "The intensive search for differences has greatly

exaggerated their importance, and true perspective of values is often completely lost, so that, with vision narrowed to seek only differences, nothing can be seen except a variation to be named."

Briefly Dr. Dwight endeavours to show that instead of accepting intergradation as a guide by which to separate species from subspecies, it should be recognized that species should be characterized by qualitative and subspecies by quantitative characters.

In illustration of his views Dr. Dwight takes the genus *Junco*, an American group of the Fringillidæ, whose breeding range is confined to the Hudsonian and Canadian faunal zones corresponding to the coniferous forests of the north and the higher elevations along the mountain ranges reaching as far south as the volcanic peaks of Costa Rica. These birds are exceedingly common at lower elevations during the winter, but Dr. Dwight's studies have been almost entirely confined to birds obtained during the breeding-season. By a careful consideration of the geographical distribution of the chief colour-characteristics of each group, he arrives at his conclusions as to the taxonomy of the genus, recognizing nine distinct species with a number of subspecies.

A certain number of individual birds which do not fit exactly into any of his species, but which combine the characters of both in varying proportions, he regards as hybrids; these of course are not common, and occur only occasionally at the junction of the breeding ranges of the contributing species.

Though perhaps not accepting all Dr. Dwight's views in their entirety, we are quite at one with him in confining differential characters of subspecies to those which are quantitative, and regarding qualitative characters as of specific value. In this way our nomenclature will give us a far better view of relationship than by lumping together large numbers of quite strongly differentiated forms under one specific heading merely because they

happen to occupy different geographical breeding ranges. In other words, we must recognize representative geographical species as well as representative geographical subspecies.

The comprehension of Dr. Dwight's paper by those not specially familiar with the birds of this genus is greatly facilitated by the series of coloured figures of the birds, showing very clearly the colour-differences of the different species and subspecies.

Many other interesting points in the paper cannot be here referred to, but all workers in systematic ornithology should consult the paper for themselves.

Ewart and Miss Mackenzie on the King Penguin.

[The moulting of the King Penguin (*Aptenodytes patagonica*). By Professor J. Cossar Ewart, F.R.S., and Dorothy Mackenzie, F.S.Z.S. Trans. R. Soc. Edin. lii, 1917, pp. 115-132, pls. 1-11.]

The Zoological Gardens in Edinburgh were fortunate enough to obtain a consignment of four King Penguins, two adult and two young, from South Georgia early in 1914, and others have reached them since. The observations and discussion of the moult contained in the paper with the title quoted were made on these birds, the observations chiefly by Miss Mackenzie, whose daily notes for the ten days between August 17 and 27, during which the moult was completed, are given *in extenso*, together with a series of photographs taken each day. The moult resembles that of a mammal rather than a bird, as the old feathers come off in patches or lumps, and during this period the birds never enter the water. These, together with other valuable observations on the behaviour of the King Penguin in captivity, are detailed in this interesting paper.

Gladstone's Microphotographs of feathers.

[The photographic analysis of a feather. By John S. Gladstone, F.Z.S.; pp. 1-13, pls. i.-ix. London (Sotheran), 1918. Sm. 4to.]

Mr. Gladstone has expanded the paper he wrote for

'The Ibis' of April last and republished it with six additional plates of photographs prepared by himself to illustrate the structure and morphology of feathers. As the illustrations of feather-structure in text-books are usually drawings and often quite diagrammatic, Mr. Gladstone hopes that his photographs, which have been taken with great skill and reproduced very successfully, will be useful to students and others interested in ornithology. The text is little more than a full explanation of the various photographs.

Grinnell's recent papers.

[The subspecies of the Mountain Chickadee. By Joseph Grinnell. Univ. Cal. Publ. Zool. xvii. 1918, pp. 505-515; 3 text-figs.]

[Seven new or noteworthy birds from east-central California. By Joseph Grinnell. Condor, xx. 1918, pp. 86-90.]

[The name of the American Barn-Swallow. Id. *ibid.* p. 92.]

The first of these papers contains a revision of the subspecies of the Mountain-Tit or Chickadee of western North America (*Penthestes gambeli*). The typical race is found in the main range of the Rocky Mountains and does not reach California, where it is replaced by three shorter-tailed races—*P. g. abbreviatus* in the higher mountains of central and northern California, *P. g. ingoensis* in the mountains of eastern California bordering on Nevada, and *P. g. baileyæ* in the mountains of southern California; of these three, the first two named are here described as new.

The second note informs us of the occurrence of seven new or very unusual bird-records in California, two of which are here described as new subspecies—*Sitta carolinensis tenuissima* and *Hylocichla guttata polionota*, both from Inyo county in the eastern central portion of the State.

The third note is a protest against Mr. Oberholser's action in using *erythrogastris* instead of *erythrogaster* as the specific name of the American Barn-Swallow. Mr. Grinnell points out that though *Hirundo* is undoubtedly feminine in gender, *erythrogaster* is a substantive in apposition and is correct grammatically as well as being the form in which the word was written by the original describer.

Kuroda on new Birds from the far East.

[On one new genus and three new species of Birds from Corea and Tsushima. By Nagamichi Kuroda. *Tori* (The Aves). Published by the Ornithological Society of Japan, Tokio. No. 5, 1917, pp. 1-6, pl. vi.]

This short paper, printed partly in English and partly in Japanese, contains a description of a Sheldrake for which Mr. Kuroda considers it necessary to propose a new generic and specific name:—*Pseudotadorna cristata*. The type and only specimen was obtained on the Naktung river in Corea, and a photograph of it is reproduced.

There is no doubt that this is the same bird as that figured in the 'Proceedings of the Zoological Society' (1890, pl. i.). This specimen was obtained near Vladivostok and was sent to Dr. P. L. Selater, who regarded it as a hybrid between *Tadorna casarca* and *Querquedula falcata*. We understand from Lord Rothschild and Dr. Hartert, who directed our attention to the plate in the Proceedings, that it is undoubtedly a new form of duck and not a hybrid, as Mr. Kuroda has since found evidence of other examples of the same duck occurring in Corea and other parts of Asia. It is a remarkable discovery and a strikingly distinct form characterized by a long black nuchal crest, a brown back and belly narrowly vermiculated with white lines, and a large patch of white on the wing formed by the coverts.

The other new subspecies are *Parus major quelpartensis* from Quelpart Island, which lies to the south of Corea, and *Zosterops palpebrosa ijimæ* from southern Corea, Quelpart and Tsushima Islands. Of the last-named species the author now recognizes six Japanese and Corean forms differing chiefly in the shape and size of the bill. Both the new subspecies are figured in colour on plate vi.

Mathews on the Birds of Australia.

[The Birds of Australia. By Gregory M. Mathews. Vol. vii. pt. ii. pp. 113-216, pls. 335-342. London (Witherby), May 1918. 4to.]

The Kingfishers are a most distinct and interesting group of Birds, both in appearance and habits, consequently in

the life-histories of the Australian species compiled by Mr. Mathews we find much that will attract the attention of the reader and possibly be new to him, especially when coupled with admirable pictures.

But far the most important section in this part of the author's work is his dissertation on the genus *Halcyon*, as limited by Sharpe in the British Museum Catalogue, vol. xvii., to which so many of the Australian forms belong. He desires to perform for this what Miller in America has done for the *Alcedininae*, though much difficulty has been caused by former splitting and recombining what now must be split anew.

The type is shown to be *Alcedo senegalensis* of Swainson, 1821, who separated *Halcyon* from *Alcedo*.

In 1827 Lesson proposed the generic names *Syma*, *Melidora*, and *Todirhamphus*, though his *Alecyon* (*rectius Halcyon*) 1830 for *Alcedo* L. was of course preoccupied, and there was no necessity to reduce the titles to subgenera. After 1848 Kaup, Bonaparte, Reichenbach and Cabanis & Heine created further genera, valid or invalid; and then in 1869 G. R. Gray started an era of recombination, which culminated in the somewhat inconsistent work of Sharpe.

Mr. Mathews makes the following decisions:—

1. That *Entomothera* should be removed to the *Alcedininae*.
2. That the Australian Kingfishers show so little affinity to the African that we cannot keep them under *Halcyon*.

3. He accepts as genera

<i>Syma</i>	for <i>torotoro</i> .
<i>Chelicutia</i>	„ <i>chelicuti</i> .
<i>Catihalcyon</i>	„ <i>coromanda</i> .
<i>Todirhamphus</i>	„
<i>Cyanalcyon</i>	„ <i>pyrropygius</i> .
<i>Sauropatis</i>	„ <i>sancta</i> and <i>sordida</i> .
<i>Actenoides</i>	„ the <i>hombroni</i> group.
<i>Caridagrus</i>	„ the <i>concretus</i> group.
<i>Uralcyon</i>	„ <i>sylvia</i> ,

4. He proposes as new genera

Dacelalcyon for *confusus*, sp. n.*Halcyonopa* „ the *dryas* group.*Chelicutona* „ *albiventris* and *leucocephala*.*Plesialcyon* „ *smyrnensis*, *cyaneiventris*, and
gularis.*Nutchera* „ *badia*.*Cecilia* „ *pileata*.*Antisyma* „ *australiana*.*Hyposyma* „ *cinnamomina*.*Lazulena* „ *macleayi* group (= *Cyanalcyon*
Cab. & Heine, nec Bp.).*Dilazula* „ the *nigrocyanea* group.*Dilazulena* „ *winchelli*.*Melanalcyon* „ *funnebris*.*Todalcyon* „ the *tutus* group.

5. And as a new subgenus

Leucalcyon for *saurophaga*.

We cannot in our limited space discuss the many subspecies proposed or cancelled, which each reader must study for himself; but must notice that *Edquista* is proposed as a new genus for *Tanysiptera carolinæ*, when the author is discussing *Uralcyon*.

The part concludes with the single Australian species of Bee-eater, where Mr. Mathews prefers *Cosmaerops* to *Merops*, distinguishing the two genera and also *Urica*. He suggests, however, a much closer examination of the whole family before arriving at certainty.

Robinson on hybrid Ducks.

[On two abnormal specimens of Ducks in the collection of the Zoological Survey of India. By Herbert C. Robinson, M.B.O.U. Rec. Indian Mus. Calcutta, xv. pt. 1, 1918, pp. 47-48, pl. iii.]

Mr. Robinson describes and figures a Duck shot in Assam and now preserved in the Indian Museum at Calcutta which he believes to be a hybrid, *Eunetta falcata* × *Chaulelasmus*

streperus. He also mentions another specimen also preserved in the Indian Museum, and described by Mr. W. L. Slater (P. Z. S. 1891, p. 313) as a hybrid Mallard $\times$ Gadwall. This latter, which he also figures, he believes to be *Anas boschas* $\times$ *Querquedula crecca* rather than the previously-named combination.

Wiglesworth on the Little Owl.

[The Little Owl (*Athene noctua*) in Somerset. By J. Wiglesworth, M.D. Proc. Somerset Arch. and Nat. Hist. Soc. lxiii. 1917, pp. 152-161; map.]

Dr. Wiglesworth has put together with great care and detail the records of the occurrence and spread of the Little Owl in Somerset. Except for two stray records in 1834 and 1878, the invasion commenced in 1907, when an example was shot at Tickenham between Bristol and Yatton in the north of the county. The following year it turned up at Pensford, also in the north of the county, as observed by Mr. Leyborne Popham, and here it has become thoroughly established and now breeds regularly. It is quite evident that the bird entered the county from the north, as its most western extension—Minehead—was not reached till 1916.

Dr. Wiglesworth also discusses the economics of the Little Owl, and appears to conclude that the benefits it confers by the destruction of mice and insects outweigh the harm in killing occasional young game- and other birds. A neat map of the county with the places where the Little Owl has occurred marked with dates greatly facilitates an appreciation of this workmanlike little paper.

South African Journal of Natural History.

[The South African Journal of Natural History. Vol. i. no. 1, 1918.]

We have recently received a copy of this new journal, which is the official organ of the newly constituted South African Biological Society lately formed by the amalgamation of the South African Ornithologists' Union and the Transvaal Biological Society.

The former of these two societies was founded in 1904, and has issued twenty-two numbers of its Journal and three of its Bulletin. Owing to the war the Union has lost a number of its members and it became increasingly difficult to carry on the journal; Mr. Haagner, therefore, who has been the leading spirit of the Union since its foundation, proposed to join with the Transvaal Biological Society, which had also been in existence for some years, in forming a new and stronger society with a wider scope to advance the study of biology and natural history in South Africa. This was effected in June 1916, and the first number of the new journal is now before us. It consists of 122 pages and is illustrated with 6 plates in black and white; it is edited by Messrs. A. K. Haagner, I. B. Pole Evans, and Claude Fuller.

Among papers dealing with ornithological subjects is one by Lieut. C. G. Finch-Davies, M.B.O.U., on birds collected and observed in the two districts of Okanjande and Outjo of the new South-west African Protectorate. But few English have collected in this former German colony since the times of Andersson and Eriksson, whose work indeed was completed before the German annexation, but a certain number of new forms have been described by Reichenow and other German naturalists. Mr. Finch-Davies' list contains the names of 147 species, two of which appear to be new to the South African fauna—*Francolinus hartlaubi* (about which, however, see Selater, Bull. B. O. C. xxxvii. 1917, p. 46) and *Vinago calva nudirostris*. Another interesting bird which was found abundantly was the curious *Lanioturdus torquatus* of very uncertain affinities, but which is almost certainly not a Flycatcher. It would be most interesting to have an example for anatomical examination.

Mr. Swynnerton sends some stray notes on the habits of Nightjars, asking why they settle on the ground and why they have so noiseless a flight. He has also recently come across a large flock of Pelicans (*Pelecanus roseus*) near Chirinda in Southern Rhodesia, a very long distance away from the sea or a large body of water—an unusual occurrence.

The third bird-paper is by Mr. R. Godfrey and relates

only to the Thrushes and Chats of the basin of the Buffalo river, and especially to the Pirie bush in the eastern part of Cape Colony.

There are many other articles of considerable interest in other branches of natural history well worth the attention of our readers, and we must congratulate Mr. Haagner and his associate editors on their great success in starting this new society, and wish it and its journal a long and prosperous existence.

List of other Ornithological Publications received.

- American Bird-House Journal. (Vol. iii. No. 1, 1918.)
 Archivum Melitense. (Vol. iii. 1-4, 1918.)
 Auk. (Vol. xxxv. No. 3, 1918.)
 Avicultural Magazine. (Third Series, Vol. ix. Nos. 9-10, 1918.)
 Austral Avian Record. (Vol. iii. No. 6, 1918.)
 British Birds. (Vol. xii. Nos. 1-4, 1918.)
 Condor. (Vol. xx. Nos. 3-4, 1918.)
 Bird-Lore. (Vol. xx. Nos. 3-4, 1918.)
 Bird-Notes. (Third Series, Vol. i. Nos. 1-8, 1918.)
 El Hornero. (Tomo i. No. 2, 1918.)
 Emu. (Vol. xvii. pt. 4, 1918.)
 Irish Naturalist. (Vol. xvii. Nos. 6-7, 1918.)
 Journ. Bombay N. H. Soc. (Vol. xxv. No. 4.)
 Rev. Française d'Orn. (Nos. 108-109, 1918.)
 Scottish Naturalist. (No. 78, 1918.)
 South Australian Ornithologist. (Vol. iii. pts. 5-6, 1918.)
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XXXV.—*Letters, Extracts, and Notes.*

Colonel Tytler's Collection of Birds.

SIR,—Readers of 'The Ibis' will be interested to learn that after a long eclipse the well-known collection of birds formed by the late Colonel R. C. Tytler, C.M.Z.S., has come to light again.

This collection, well known by repute through the writings of Hume and Beavan to all students of Indian Ornithology, was originally housed in Simla by its collector and owner at his residence called "Bonnie Moon."

At Colonel Tytler's death the collection was lost to sight, and last year, when on leave in Simla, I endeavoured to trace it, without success. Curiously enough, however, a month or two later, on visiting the Lahore Central Museum, I learnt that the collection had recently been presented to that Museum; its history between the date of Colonel Tytler's death and last year has been as follows.

When Colonel Tytler died his widow, Mrs. Tytler, turned the house "Bonnie Moon" into a sort of private hotel. From exigencies of space the birds were moved from the Museum-room and packed away in boxes, which were stored in the house. The date of this would appear to be about 1873, as, when opened, the skins were found to be packed in newspapers of the dates 1871-1872-1873. In the frequent absences of Mrs. Tytler in England and elsewhere the boxes were not opened, and somewhat neglected. In 1907 Mrs. Tytler by deed of gift presented the collection with other property to her daughter-in-law, Mrs. Livingstone-Thompson, who, after some other efforts to dispose of it, sold it in 1909 to Mr. B. Bevan-Petman, the well-known barrister of Lahore. His intention was at first apparently to present it to the Tring Museum, but circumstances determined that he should give it to the Lahore Museum.

The Curator of the Lahore Museum very kindly asked me if I would care to undertake the work of opening and arranging the collection, so last month I went to Lahore for ten days to do the preliminary work of opening the boxes and seeing what there was.

The collection was found to be in a very unsatisfactory state, as was to be expected, after forty years' neglect. While a few skins were in perfect condition, many had been entirely ruined by damp and insects. Each skin was enclosed in a stitched envelope of newspaper; attached to the skins were labels giving the data, and a more or less duplicate label was stuck to the outside of the paper envelope.

I enclose a specimen of one of the labels.

COL. TYTLER'S MUSEUM.

Cat. No. $\frac{34}{2}$, Col. No. 316.

Gen. *Limnaetus*.

Sp. *nipalensis*.

Hab. Simla.

Sex. ♀. C.

R. C. T.

At present, after many vicissitudes, there are about 2500 skins remaining, many of which, however, are only worth keeping until they can be replaced by newer specimens. The collection is very varied and contains specimens from most parts of the world, Brazil in particular being well represented. There are many skins from the Andaman Islands, and amongst those and other Indian skins it is probable that fuller examination will reveal several "types," as Colonel Tytler was concerned in the discovery and description of several new species.

Unfortunately the Catalogues to which all the labels refer are at present not forthcoming. A lady resident in Simla, who saw something of the collection in the old days, has furnished the information that Hume borrowed without returning it—rather a failing of his judging from old ornithological correspondence!—and it is quite possible that the Catalogues are with his collections in the Natural History Museum at South Kensington. At any rate, I should be very grateful to anyone who can throw light on their present whereabouts.

Special cabinets are being prepared in the Lahore Central Museum, and it may be hoped that the collection will now be safe for many years to come.

Yours sincerely,

HUGH WHISTLER.

c/o Messrs. King, King & Co.,
Bombay.

10 June, 1918.

Types of *PACHYCEPHALA LITTAYEI* Layard.

SIR,—In 'The Ibis' for July 1878 (Vol. ii. Fourth Series, No. vii.), E. L. and E. L. C. Layard in the course of their "Notes on the Avifauna of New Caledonia," on page 255 described as new *Pachycephala littayei*, from the male, stating that the female was unknown.

Shortly afterwards Mr. Alexander Agassiz received from the Layards, from whom he was accustomed to get quantities of birds, mostly by exchange, two male specimens of this species, both from Lifu, Loyalty Islands, one of which, No. 29749 Museum of Comparative Zoölogy, taken 2 September, 1878 by E. L. Layard, is marked on the back of the label in Layard's handwriting—" *Pachycephala littayei* Layard, TYPE."

The following year (Ibis, April 1879, p. 190) Tristram described the female of the species, which in the meantime had been obtained by Layard, and figured (Plate vi.) male and female.

When, in 1883, Gadow prepared Vol. viii. of the 'Catalogue of Birds in the British Museum,' he claimed as types of *Pachycephala littayei* Layard specimens *a* and *b*, male and female, from Lifu, collected in August 1878 by E. L. Layard.

On the face of it, neither these nor our skin marked "Type" by Layard are types as we understand the meaning of the word to-day. All were collected after the species had been described. Furthermore, the female was unknown to the Layards at the time they named their bird. Obviously Layard used the word "type" in a sense not uncommon in his day, meaning a typical example of the species from the original source, and identified as such by its describer. Lawrence and other contemporary ornithologists frequently so marked specimens they sent in exchange.

The real type of *Pachycephala littayei* was probably

retained by Layard. Can it be in the South African Museum?

Yours truly,

Museum of Comparative Zoölogy,
Cambridge, Mass., U.S.A.
19 June, 1918.

OUTRAM BANGS.

Crested Larks of the Nile Valley.

SIR,—In ‘*Novitates Zoologicæ*,’ vol. xxiv. pp. 439–441 (December 1917), Dr. Hartert has again reviewed the races of *Galerida* from the Nile Valley.

May I, as a student of Egyptian Crested Larks for over eleven years, make some remarks on Dr. Hartert’s paper? The name *altirostris* was given by Brehm (Vogelfang, p. 124, 1855) to the Upper Egyptian form, and he clearly states the locality as “Oberägypten selten nordlich” (we now know that it is found on the poorer soil to the extreme north of Egypt, though Brehm did not know this). Any attempt to transfer this name to any other form is therefore misleading and against all laws of priority. Because the scientific name *altirostris* has been crossed out on the label of the type and again “underpunctuated,” meaning that it must stand after all, probably done by Brehm himself, in no way alters the fact that *altirostris* is the name of the “Upper Egyptian” form. Also Brehm’s type of *maculata*, named three years later than *altirostris*! (which I have examined and compared with a large series of my own) is not distinguishable from “Upper Egyptian” birds, as can be clearly seen when a large series is examined. Brehm’s Kom Ombo *altirostris* is rather ochreous in colour, but I have exactly matched it with a specimen in the Giza Museum from Giza, and with one from near Damietta. I also have a bird from Luxor which matches Brehm’s type of *maculata*.

This being so, we have only the two forms: *G. c. mæritica* Nicoll & Bonhote from the Fayûm, and *G. c. nubica* Bianchi from Dongola, to discuss, as *G. c. nigricans*, the dark Delta

bird, is agreed upon by both Hartert and myself, as is also the very pale *G. c. isabellina* from Upper Nubia and the Egyptian Sudan. *G. c. mœritica* differs from *G. c. altirostris* Brehm (Vogelfang, p. 124, 1855) by having longer wings and, in a large series, generally having whiter underparts and smaller, more clear-cut spots on the jugulum.

G. c. nubica Bianchi is a totally different form, and is very close to and hardly separable from *G. c. caroli* Hartert, which Hartert does not mention in the paper under review!

The last paragraph of Dr. Hartert's paper is best answered by the last paragraph on p. 547 of my paper, Ibis, 1914, pp. 546-551.

That Hartert does not recognize *G. c. mœritica* from the Fayûm, alters Brehm's names in no way whatever. The earliest published name of the "Upper Egyptian" Crested Lark is *Galerita altirostris* C. L. Brehm, 'Vogelfang,' p. 124, 1855, and the selection of the type, whether it be from Kom Ombo or Aswan, is of no significance seeing that they belong to one and the same form!

The fact of "alterations" having been written, crossed out, and then underpunctuated on the label of the Kom Ombo bird makes or should make no difference to anyone, least of all to Hartert, who has frequently expressed to me personally and also done so in print that a scientific name on a label is unnecessary. When I wrote my paper on Egyptian Crested Larks in 1914 I had before me 136 specimens from Egypt, and although I have since added a considerable number, I have had no reason to alter any of the decisions I then put into print, but rather those decisions have been strengthened.

The point of these remarks is to fix the name *altirostris* to the form of Crested Lark which occurs from the Mediterranean coast of Egypt to at least as far south as Aswan on poorer soil than that inhabited by *G. c. nigricans*, the type-locality of which is Upper Egypt.

Hartert's selection of the type of *altirostris* as a bird shot near Ambukkol is most incorrect, as the Ambukkol referred to is south of Dongola and cannot by any stretch of

imagination be said to be in "Upper Egypt." The form occurring on the Dongola bend of the Nile is, as I have stated above, different from that found in Upper Egypt and must be known as *G. c. nubica* Bianchi. As I stated in my paper in 'The Ibis' in 1914, *nubica* of Bianchi has never been recorded from Egypt, nor to my mind is it ever likely to occur there!

C. L. Brehm's ideas of Upper Egypt and Nubia may not have been "very fixed," but he first described *G. c. altirostris*, giving "Upper Egypt seldom Northwards" as a definite locality, therefore his name for that form *must stand*.

Hartert's statement on p. 440, *i. e.*, "Brehm when first naming this form (Vogelfang, p. 124, 1855) said 'Ober-ägypten'" is not quite correct, for, in the description referred to, Brehm adds "selten nordlich."

We therefore have these facts to consider:—

In 1855 Brehm names a bird from Kom Ombo, Upper Egypt, as *Galerita altirostris*, giving the localities as Upper Egypt seldom northwards.

In 1858 he describes a form from Aswan as *Galerita maculata*. The type of this form can easily be matched with other examples from Upper Egypt, and therefore does not differ from his *G. altirostris* of 1855!

(Crested Larks vary quite considerably individually in all parts of their range, and one requires large series before "rushing into print.")

Hartert now wishes to transfer the old name *altirostris* of the Upper Egyptian bird to a totally different form from Dongola (which is not in Upper Egypt or in Egypt at all!), regardless of the fact that Brehm had already used this name for the Upper Egyptian form three years previously.

I have therefore nothing to alter or revise in my conclusions as given in my former paper.

Yours truly,

Giza, Egypt.

MICHAEL J. NICOLL.

28 May, 1918.

Mr. Jourdain and Nomenclature.

DEAR SIR,—I have no wish to enter into any controversy on the subject of Nomenclature. But I would like to record my protest against the offensive and insulting style of Mr. Jourdain's letter in the July number of 'The Ibis' in which he gratuitously insults an old and valued member, Mr. J. E. Harting. No one objects to fair criticism, but the style adopted in this case cannot be passed by without protest from all the old friends of the late Editor of the 'Zoologist' and the Natural History Editor of the 'Field.'

Yours sincerely,

Hever Warren,
Hever, Kent.
15 August, 1918.

E. G. B. MEADE-WALDO.

DEAR SIR,—The impressive warning given by the Rev. F. C. R. Jourdain in the concluding paragraph of his letter published in 'The Ibis,' 1918, p. 528, ought not to be lightly set aside. It would be a lamentable result if the friendship between the two English-speaking peoples were jeopardised by the use or misuse of a synonym.

Allow me to mention my own experiences. Some months ago I was staying at the Planter's Hotel, Charleston, South Carolina. Coming in rather late for dinner, my old acquaintance Samuel the coloured head-waiter set me down at a side table. Wild Duck was on the menu. "Sam," said I, "what kind of duck, canvas-back eh?" "No sah, mallard, same as you used to shoot with Colonel Stoney on the Ogechee." "Capital! our old friend *Anas boschas*, bring me some."

Sam looked very grave, and coming to me on tiptoe said in my ear: "Sah, dat word *bosky* is contraband; de ole Colonel Stoney, not young Colonel who is gone to France, dine here last week, and he eat some mallard duck; den he say Sam, de President give order at de White House dat dis duck be called *Platterinky*, not *Bosky*, when put on de table; so, sah, *Bosky* is contraband!"

New men, new nomenclature; not that of Alexander Wilson, Audubon, and Coues, (perhaps, after all, they were old fossils with just some rudimentary acquaintance with ornithology); and so ten-thousand names are to go because, it would appear, names are dependent on population. Since Mr. Jourdain assures us that an English-speaking nation a hundred million strong have adopted the name of *platyrhyncha*, which is known and understood from the Atlantic to the Pacific, it may be as well when we cross the "Herring Pond" to use that term for our old friend the Mallard.

My conversation with Sam, the head-waiter at the Planter's Hotel, is a confirmation of Mr. Jourdain's statement, that the alteration in the name of our familiar wild duck has taken deep root amongst the masses of the hundred million English-speaking people, "from the Atlantic to the Pacific."

Yours faithfully,

H. W. FEILDEN.

Burwash, Sussex.

20 August, 1918.

Ibis "Separates."

DEAR SIR,—Would it not be possible in the interests of working ornithologists to extend slightly the principle of "separates" of articles which appear in 'The Ibis'? At present these "separates" are only printed off in the interests of the writer of any article, who receives 25 copies of his article to present to his friends. It would be a great boon if such "separates" were available on purchase to members of the Union. There are many members like myself who work in foreign lands and therefore have to economise library space, yet it is just the worker in out of the way spots who wants to refer to the available literature regarding his station, and that literature is usually composed solely by articles in 'The Ibis.' To carry several bound volumes about just for the sake of two or three articles is often out of the question, while 'The Ibis' is too valuable

to cut up. Therefore I feel sure it would be greatly appreciated if members on opening and reading their current copy of 'The Ibis' knew that they could on payment receive a separate of any article which specially referred to their own branch of the subject or locality. One is chary of writing to members personally unknown to ask for a present of one of their separates.

Yours truly,

c/o Messrs. King, King & Co.,

Bombay.

16 June, 1918.

HUGH WHISTLER.

[This matter will be considered by the Committee.—ED.]

The Birds of the Somme Valley.

DEAR SIR,—I should like to add a few more species to the list of those mentioned in my article "Ornithological and Oological Notes from the River Somme Valley," that you were good enough to publish in the July 1918 number of 'The Ibis.'

Although the following species did not occur actually in the Somme valley, they were found only a few miles north of it, namely, in the vicinity of Montreuil-sur-Mer, and they help to make my article more complete, and, I hope, more interesting.

***Pernis apivorus.* Honey-Buzzard.**

A nest of this species found early in May by a friend. Two typical eggs considerably incubated on 11 June. The nest was in a beech-tree, and was a large structure copiously lined with green beech-leaves and branches. The old birds were very confiding, and, except for the difficulty of seeing them when at rest, they were constantly observed. They were extremely silent, and only once was a note heard by one, personally, and that curiously enough appeared to one to resemble that of the Common Buzzard.

Iynx torquilla. Wryneck.

A nest containing newly-hatched young, in a hole low down in a pollarded willow near Bereq-sur-Mer on 25 June.

Phoenicurus titys. Black Redstart.

Several pairs nest among the buildings in Montreuil, and a male was seen and heard singing in June on a house-top in Paris-Plage.

Phylloscopus sibilatrix. Wood-Warbler.

A male in full song in a beech-forest near Montreuil in June. Presumably nesting, but nest not searched for.

Upupa epops. Hoopoe.

A pair successfully hatched out a brood in a hole in a walnut-tree situated in the immediate vicinity of Montreuil.

Willow-Tit. ? subspecies.

A nest with nine eggs on the point of hatching on 19 May. Swamp bordering River Canche, Montreuil. The nesting-hole was about five feet up in an extremely rotten stump, and nest an extremely scanty affair of wood-fibre and a few minute pieces of wool.

Hypolais icterina. Icterine Warbler.

Quite common in all sorts of undergrowth. Nests found in alder, willow, hawthorn, syringa, bramble, dogwood, and elderberry. I have no doubt this species nests in the Somme valley, and that I overlooked it last year owing to my hunting for it in marshes instead of in gardens, young plantations, etc., which it favours largely to the exclusion of marshy localities.

Pyrhula? Bullfinch.

A nest with five fresh eggs on 30 June in an alder. Several pairs frequent the marshy spinneys of the River Canche valley, in the vicinity of Montreuil.

In conclusion, I should like to add that the Marsh-Warbler (*Acrocephalus palustris*) which I found common last year in the Somme valley is even more common in the

River Canche valley, and one has no sort of difficulty in finding their nests everywhere where there are osier plantations—and that is practically everywhere in the Montreuil neighbourhood.

Yours faithfully,

The Forest,
Kerry, Montgomeryshire.
18 July, 1918.

W. MAITLAND CONGREVE,
Major R.A.

Mr. Ogilvie-Grant.

It is with deep regret we learn that Mr. W. R. Ogilvie-Grant has been compelled through ill-health to resign his post at the Natural History Museum, where he has had charge of the Bird-room and the Bird-collections since the death of Dr. Sharpe in 1909. Mr. Ogilvie-Grant was appointed a Second-class Assistant in the Museum in 1882, and in 1885 commenced working in the Bird-room as a colleague of Dr. Sharpe. He became Assistant Keeper of the Zoological Department in 1913. Mr. Ogilvie-Grant joined the 1st County of London Regt. (Volunteers) soon after the commencement of the War, and it was while working on the outer defences of London in August 1916 that he got a sunstroke which led to further serious illness, from which he is now slowly recovering.

We hope that the relief from official worries and the quiet of the country, to which he has lately moved, will have a beneficial effect on his health, and that he will soon be able to resume his work in the advancement of Ornithology.

Notice to Members.

The attention of members is drawn to the fact that all communications to the Hon. Sec. and Treasurer, Mr. E. C. Stuart Baker, concerning subscriptions and the business of the Union should be addressed to him at the Chief Police Office, West India Docks, London, E. 14. Communications for the Editor and all books and pamphlets for review or notice in 'The Ibis' should be addressed to Mr. W. L. Selater, 10 Sloane Court, S.W. 1.

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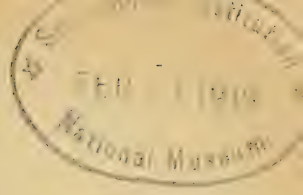
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